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NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 99

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CONTENTS

ASIA

AUSTRALIA

Mining of Koongarra Uranium Nears Final Approval (Errol Simper; THE AUSTRALIAN, 28 Apr 81).....	1
French Company's Uranium Treatment Plan Rejected (David Broadbent; THE AGE, 28 Apr 81).....	2
Briefs Mary Kathleen Problems	3

BANGLADESH

Editor Questions Wisdom of Indian, Pakistan Tests (Editorial; THE BANGLADESH TIMES, 29 Apr 81).....	4
--	---

INDIA

Delhi Urged To Reconsider Nuclear Weapons Policy (M. L. Thapan; THE STATESMAN, 28, 29 Apr 81).....	6
Big Power 'Snooping' May Strengthen Bomb Lobby (G. K. Reddy; THE HINDU, 1 May 81).....	10
Janata Executive Discusses Indian Nuclear Policy (THE TIMES OF INDIA, 2 May 81).....	11
'HINDU' Correspondent Reports on Washington Talks (N. Ram; THE HINDU, various dates).....	12
Sethna, Price Meeting	

Rejection of Safeguards
Indian Grievances Told

U.S. Transition Team Nuclear Policy Report Described (N. Ram; THE HINDU, 15 Apr 81).....	17
Tarapur Unit 'Sick' From U.S. Shipment Delays (PATRIOT, 19 Apr 81).....	19
Defense Studies Expert Advocates N-Weapon Development (K. Subrahmanyam; THE TIMES OF INDIA, 26 Apr 81).....	20
U.S., Indian Views on Tarapur Spent Fuel Told (G. K. Reddy; THE HINDU, 27 Apr 81).....	30
Parliamentary Committee on Atomic Energy Meets (G. K. Reddy; THE HINDU, 28 Apr 81).....	33
Sethna Announces Nuclear Generation Plan (PATRIOT, 29 Apr 81).....	35
Rao Speaks to Lok Sabha on Tarapur Fuel Talks (THE TIMES OF INDIA, 30 Apr 81).....	37
Work on Spent Fuel Processing Plant Progressing (THE STATESMAN, 6 May 81).....	40

LATIN AMERICA

ARGENTINA

Details on Heavy Water Plant Featured (LA NACION, 31 Mar 81).....	41
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MINING OF KOONGARRA URANIUM NEARS FINAL APPROVAL

Canberra THE AUSTRALIAN in English 28 Apr 81 p 3

[Article by Errol Simper]

[Text]

THE nation's most controversial uranium find, Koongarra, in the middle of the Northern Territory's Kakadu National Park, could be mined before the end of the year.

The new holder of the Koongarra development application lease, Denison Australia, intends to submit a development proposal to the Federal Government's Foreign Investment Review Board within two months.

If the Canadian company's proposal is accepted, Denison would only need to reach agreement with local Aborigines before starting work.

Both the company and the Aboriginal Northern Land Council said yesterday initial negotiations had gone very well.

This could hasten the project by avoiding the bitter debate over sacred Aboriginal sites which preceded development of the Nabarlek uranium mine in Arnhem Land.

The land council's chairman, Mr Gerald Blitner, said in Darwin yesterday he had been given the go-ahead by Aborigines.

He said the company had been "co-operative in every angle" during "exploratory negotiations."

But development of Koongarra could expose deep rifts within the ALP over the issue of uranium mining.

The ALP is officially against mining and processing uranium in Australia but the industry goes on regardless.

The Leader of the Northern Territory's Labor Opposition, Mr Jon Isaacs, said in Darwin yesterday he had already "lined up" a series of meetings with advisers and expected to make a statement on the matter "within 48 hours".

CONTROVERSY

Koongarra, discovered in 1970 and untouched since, has always been the most contentious of the big uranium strikes in the Territory's Alligator Rivers "uranium province" because of its location in the middle of Kakadu National Park.

It was sold by another Canadian company to Denison last year for an undisclosed sum.

After endless controversy during the years of the Whitlam Government over whether Koongarra should be exploited, the present Government proclaimed stage one of the Kakadu Park and declared Koongarra a "prescribed" area within park boundaries.

A spokesman for the Deputy Prime Minister, Mr Anthony, said in Canberra yesterday the legislation had already been

passed to allow development inside the prescribed area but any further activities outside that area might require new legislation.

The spokesman confirmed the project had received environmental approval.

Denison Australia - a fully-owned subsidiary of Denison Mines of Canada - has to satisfy the review board on the government guidelines for 75 per cent Australian ownership of uranium development projects.

PROPOSAL

The company's managing director, Mr Kevin Torpey, said in Sydney yesterday a proposal within the guidelines would go to the Government within two months.

He said talks with the land council were progressing satisfactorily.

Hopefully, work could start before the end of the year but everything would depend on the five-month tropical "wet" season which begins in October, he said.

It would take about 12 years for Koongarra to be mined out.

After restoration, the area would be incorporated into the Kakadu National Park.

FRENCH COMPANY'S URANIUM TREATMENT PLAN REJECTED

Melbourne THE AGE in English 28 Apr 81 p 3

[Article by David Broadbent]

[Text]

BRISBANE. — A Queensland magistrate has rejected a French company's plans to build a treatment plant at its \$130 million uranium deposit at Ben Lomond, near Townsville, on the grounds that the plant could be unsafe.

The decision, by the Charters Towers mining warden, Mr E. W. Lendich, is a big setback for Minatome Australia Ltd in its bid to get the State's second uranium operation into action. Uranium ore has to be treated for export to reduce its bulk.

Mr Lendich said Minatome had not satisfied him that it could treat the ore without a risk of dangerous wastes escaping.

He rejected the company's application for a 2085 hectare lease but granted a 10 hectare extension to the perent lease, to allow the company to continue its mining operations.

Mr Lendich said he had no real objection to the mining of uranium ore at the site but he was not satisfied with provisions for the treatment of the ore and the long-term storage of tailings and residue.

He found that there was no long term maintenance plan for toxic wastes in evaporation ponds and tailings dumps and said there was a possibility of toxic waste discharges into ground and surface water.

He expressed doubt on four matters:

- The suitability of the site for evaporation ponds and tailing dumps.

- The availability of clay needed as a liner for the ponds and dumps.

- The effective long-term isolation of toxic matter, bearing in mind the erosive nature of the land.

- Likely damage to the environment by toxic discharge.

Under Queensland law, a mining warden's decision is not binding on a State Government. The Premier, Mr Bjelke-Petersen, has indicated that he will do everything he can to see the operation proceed.

Mr Bjelke-Petersen said the company would be given an opportunity to present new information on its plans because "uranium was 'no good to Queensland, or Australia, if it is left sitting in the ground'".

But even if the Mines Minister, Mr Gibbs, overrules the warden's decision, his findings will have serious implications for the Federal Government when it considers granting the company an export licence.

Minatome has until the middle of next year to present the Federal Government with a final environmental impact statement, and will be required to find 75 per cent Australian equity in the project.

Minatome officials would not comment on the decision yesterday. They said they would wait until they had a full report of the decision.

A spokesman for Mr Gibbs said he did not expect to get Mr Lendich's final report for two days but it would certainly be discussed in Cabinet next week.

Despite its status as a "recommendation only" the decision is a triumph for the Townsville Conservation Council which originally lodged its objections to the project with little hope of success.

The Federal Opposition's spokesman for Environment and Conservation, Mr West, said in a statement yesterday that the conservation council and its convenor, Adrian Jeffreys, were to be congratulated for their stand in the warden's court.

BRIEFS

MARY KATHLEEN PROBLEMS--Mary Kathleen Uranium might never pay a dividend, will probably not sell 20 per cent of its total ore and is likely to close its North Queensland mine in 1983. MKU shareholders got that message at yesterday's annual general meeting. The company's chairman, Mr J. L. Liebelt, said a "marked softening" of the uranium market was reflected in 1981 contract prices, which would average about 15 per cent less in real terms in 1981 than in 1980. Earnings would be cut by lower uranium-oxide prices, higher fuel and sulphur costs, higher mining costs and the expectation that all the product would not be sold. MKU was looking at areas around the Mary Kathleen ore body and had joined with AGIP and Sturts Meadows in exploration areas near Mt Isa. The Mt Isa programme could cost \$1.6 million over the next 18 months, shareholders were told. The company could now only hope to sell small tonnages of ore at or near spot prices, which had fallen in the past year by 30 per cent to near \$US25 a tonne. [Excerpts] [Melbourne THE AGE in English 28 Apr 81 p 17]

CSO: 5100/7538

EDITOR QUESTIONS WISDOM OF INDIAN, PAKISTAN TESTS

Dacca THE BANGLADESH TIMES in English 29 Apr 81 p 5

[Editorial: "Nuclear Madness"]

[Text]

News about imminent nuclear bomb tests by India and Pakistan now comes from no less a person than a Senator of renown in the United States. He has informed that the US government has reliable evidences of both India and Pakistan going ahead with preparations of sites to detonate their nuclear devices.

We, in the subcontinent, cannot but be worried by these developments around us. For a long, long time tensions and insecurities were phenomenon usually far away. Wars raged now in Vietnam, then in Angola, Cambodia or in some country in Latin America, but these troubles seemed not to touch the South Asia region. Now, the arms race and a deadly nuclear one at that, has engulfed the subcontinent, with external aggression already on its doorsteps.

An underdeveloped country aspiring for nuclear weapons and hence security in the nuclear age, ought to answer logically to its people these questions. What kind of security is desired with these weapons and against whom? Are these necessary to obtain protection from unpredictable actions by the superpowers or is the objective regional hegemony or catching up with a regional rival? If the former is the case, then it must be foolish for a poor developing country to believe that it can invest the quantum of resources on the scale of either the Soviet Union or the United States, or even China or Great Britain, to acquire a nuclear capability commensurate with those

countries. After spreading its resources thin amongst too many pressing economic priorities, a developing country will have little left to produce may be a few bombs of the Hiroshima type, no match to the missile-delivered and remote controlled sophisticated nuclear arsenals possessed by the nuclear elite. The amount of resources which even France, for instance, spends a year for fine tuning its nuclear weapons delivery systems and deployment strategies would be beyond the capacity of most developing countries to maintain after taking care of the barest economic needs of their population.

So why this illogic? A primitive bomb will only scare a neighbour possibly and put pressures on it to come up with an equaliser despite very great economic sacrifices to be made by people living in abject poverty. But after a while, both countries will continue to be just as insecure with their enhanced capacity to do greater harm to each other, tossing a few vintage 45 bombs at each other, something they will probably not do anyway considering the consequences. But they will have nonetheless wasted billions in a non-sensical arms race which could most certainly find more appropriate use to better the lot of their impoverished people.

CSO: 5100

DELHI URGED TO RECONSIDER NUCLEAR WEAPONS POLICY

Calcutta THE STATESMAN in English 28, 29 Apr 81

[28 Apr 81 p 8]

[Article by M.L. Thapan]

[Text]

THE reported possibility of Pakistan being able to explode its first nuclear device in a year's time, or less, brings into sharper focus the military implications of the possible use of nuclear weapons, by Powers inimical to India, in a future confrontation.

The prime ingredient in nuclear credibility, directed against an opponent equipped only with conventional weapons, is the capacity of a nuclear Power to deliver a nuclear missile to a chosen enemy target with accepted parameters of accuracy. Nuclear credibility assumes different dimensions when we consider possible confrontations between nuclear Powers, when factors such as the relative scales of nuclear weapons and the prospects of escalation from low-yield tactical battlefield exchange to high-yield unrestricted strategic use by both the sides, come into play. But this is the zone of high-grade confrontations where situations of second-strike capability leading to mutually assured destruction may arise, with which we are not concerned in this analysis.

SEVERAL OPTIONS

It is a relatively simple exercise for defence planners to deal with conventional armament, provided their intelligence apparatus is efficient and there is the will to resist. In such a situation, what needs to be kept under

constant review is the Order of Battle of a likely aggressor, an inventory of his armament, his state of training and the quality of his leadership, and, of course, an assessment of his strategical and tactical objectives. Given this information, the prudent defence planner can take steps to marshal his own counter-measures and thwart the aggressor's aims. A threat posed by forces equipped with only conventional weapons needs to be matched by forces of greater strength and equipment, so as to withstand the initial shock of the assault, inflict attrition, and then deliver a crippling counter-blow. The choice of a softer option is at best, a stalemate, or an agonizing progression from one cease-fire to another. Or at the worst, military defeat.

While the risks can be gauged fairly accurately in a conventional war, the picture changes drastically in a situation of nuclear asymmetry. An aggressor possessing nuclear credibility is in a dominating position; no amount of conventional superiority or manoeuvre on the part of his non-nuclear opponent will avert a military checkmate, if there is sufficient demonstration of the aggressor's readiness to use the ultimate weapon.

The aggressor has several options open to him to achieve his war aims. He could commence his invasion using conventional forces in mass, make a break through the opposing defence and, while regrouping

for his advance through the gaps created, threaten to destroy by a nuclear strike the defender's counter-attack force which would inevitably be marshalled against him. If his initial attack failed to secure him a lodgement in the defences, he may threaten the use of a nuclear strike to gain a breach, through which his armoured forces could pass unopposed. On the psychological plane, if he met with unexpectedly strong resistance, he could exert nuclear blackmail by identifying strategic targets in the defender's rear which would receive a nuclear strike if resistance did not cease.

All these warnings of course, would be preceded by an intense propaganda offensive, designed both to secure international understanding and to subvert the loyalty and morale of the opposing forces and their civil population. The defender would then be left with the choice of either calling his invader's bluff or acceding to his demands.

An objection may be raised that the defender is unlikely to be so isolated from the international community that the United Nations Security Council would fail to be galvanized into action. The historical record, however, suggests that the intervention of the Council to bring regional conflicts to a halt has not been consistent. Where super Power interests have coincided, a cease-fire has been imposed; where they have been divergent, or

where one or the other super Power has been directly involved, the Council has been helpless. We have the examples of the U.S. involvement in Korea and Vietnam, and the Soviet intervention in Hungary and Czechoslovakia. More recently, there has been the Chinese invasion of the re-united Vietnam, and the Iraq-Iran war which has been in progress for over seven months without signs of effective intervention by the Security Council. A non-nuclear defender, therefore, who is subjected to nuclear blackmail, cannot unreservedly place his trust in the hands of the Security Council to come to his rescue.

WHILE it is reasonably easy to calculate the risks in a conventional war, and fight it, a nuclear Power has all the advantages in waging war against a non-nuclear defendant, even if the former does not in fact use a nuclear weapon. Lieutenant General M. L. Thapan argues that while there has never been a threat of the use of nuclear arms in the post-war period, there is no guarantee that nuclear blackmail will never be attempted. Stressing the ineffectiveness of the U.N. in many situations, as well as the unreliability of promises of nuclear cover, the author urges rethinking of our nuclear policy in view of China's progress in this field and Pakistan's attempts at nuclear weapon development.

NATO'S EXAMPLE

It could be argued, of course, that in none of the examples of the past has there been the threat of use of nuclear weapons and that should such a situation arise, the Security Council may view it very differently. This may well be so. Indeed one fervently hopes it shall. But in the present order of the world, when nations still resort to the use of force to impose their will on others, can a country base the defence of its freedom and territorial integrity solely on expectations?

We have seen countries, bound so closely in a mutual defence alliance as the North Atlantic Treaty Organisation, who, despite the awesome nuclear power of the United States, still choose to maintain their independent nuclear capability. Whether such capability has any relevance in a nuclear confrontation between the two super Powers is a moot point. But it does indicate a fear that nuclear support may not be available from the United States in contingency. Affecting the whole of NATO. And it is for those situations that Britain and France have developed their own nuclear deterrents.

The philosophy of deterrence has grown with the rising destructive power of nuclear weapons, the proliferation in their number and the means of their delivery. It is not so much their actual use (barring, of course, the two used at Hiroshima and Nagasaki, which brought World War II to an immediate end) as the threat of their use which, paradoxically enough, helps to keep global peace fragile though it may be.

To a lesser extent, the possession of an independent nuclear deterrent protects the holder from isolated nuclear blackmail, not posed by either super Power. In a world where nuclear arms are no longer the monopoly of the super Powers, where they have been clandestinely developed, or are in the process of development, there is no guarantee that they cannot, or would not, be used by other Powers possessing them. The mere threat of their use against a non-nuclear Power would be a sufficient deterrent in the absence of effective international intervention.

In our own context, we have been in confrontation with China for over two decades. For a little over half this period, China has been a burgeoning nuclear Power and has now acquired near full-status membership of the nuclear club. It has carried out its own testing, developed credible means of delivery using both aircraft and intercontinental ballistic missiles, and is now reportedly investigating the scope of tactical nuclear weapons. There is nothing to suggest that the coun-

try is being handicapped, in any way, in using nuclear pressure to support its use of conventional force in a future conflict.

GRIM PROSPECT

With Pakistan we have been in confrontation even before its creation. There is nothing we can do, rationally, to satisfy its rulers of our peaceful intentions. India will remain Pakistan's bete noire; if we did not exist, a bogey would have to be invented. The prospect of Pakistan going nuclear is one therefore which we should not view with equanimity. The successful explosion of a nuclear device is a far cry from nuclear credibility. Nevertheless, given Pakistan's permanent hostility towards India, and the frenzy with which all its offensive measures towards us are directed, it is only a matter of time before it develops a credible, if rudimentary, means of nuclear weapon delivery.

The grim prospect before us, then, is that of nuclear blackmail from two Powers peripheral to our territory acting either independently or in collusion. It would be a foolhardy defence planner who would go along with the moralist and wish the threat away, or take comfort in the classic counsel of the sage Confucius to helpless Chinese women in danger of criminal assault: "If rape be inevitable, relax and enjoy it."

If we have renounced the acquisition of nuclear capability ourselves, there are then only two courses open to us to face this threat. One is to lobby actively for effective international intervention. If this is not forthcoming and the threat persists, the second course is to enlist the nuclear support of a friendly super Power.

One does not know if the Indo-Soviet Treaty of Friendship and Cooperation concluded in 1971 provides for such a situation, but this avenue should no doubt be explored well before a likely confrontation. If there are no cast iron guarantees, or they are hedged in by conditions unacceptable to our sovereignty, then surely we must seriously reconsider our unilateral renunciation of nuclear weapon development.

[29 Apr 81 p 8]

[Article by Amalendu Das Gupta]

[Text]

LATEST reports about Pakistani preparations for nuclear weapons, in the context of plans for U.S. arms supplies, have inevitably revived the demand for an Indian bomb. The demand might well have been more insistent, as it was after China's first nuclear explosion in 1964. That Pakistan was probably engaged in a bomb programme was indicated as early as 1978; Washington confirmed this by cutting off development aid to Islamabad early in 1979. Though there were periodic suggestions for an appropriate Indian response, the demand was seriously made in Parliament only in July last year, and has recently been repeated with a greater sense of urgency.

If public opinion in India has not been more exercised over the issue it is perhaps partly because of some uncertainty about the exact nature of the Pakistani programme. What is known for a fact is that Pakistan has undertaken a project for uranium enrichment, which may be needed to produce a certain type of reactor fuel but can also be a means of separating the fissile (fissionable) uranium-235 from the much larger non-fissile part of natural uranium. (A nuclear explosion can be induced in uranium-235, as in plutonium—another fissile material.) Pakistan's nuclear power programme, or the likely nature of its early development, does not suggest that it needs enriched uranium for power reactors. Enrichment, therefore, must be for producing bomb material. (Pakistan is known to have a plutonium project as well, but appears to be relying more on uranium enrichment.)

The conclusion is reinforced by recently discovered facts about Pakistani nuclear plans since Bhutto's time especially by the disclosure of how a Pakistani scientist "stole" enrichment know-how from a West European plant, how Pakistan obtained large quantities of the necessary materials and equipment from abroad by clandestine means, and how work on its enrichment plant has been conducted for years in the utmost secrecy. Further confirmation

has come from U.S. and other Western intelligence reports; there is also indirect evidence from some Pakistani pronouncements, though Islamabad's official position is that the project is entirely for "peaceful purposes". But there is still some uncertainty about the progress made, about the probable time of the first bang.

PAKISTANI BANG

One prediction, in 1979, was that Pakistan would carry out its first explosion by the end of the year. But considering its general technological development and what the project entailed (the uranium-235 route to the bomb is longer and somewhat more difficult than the plutonium route) this seemed highly improbable. One acknowledged expert told me that it would be possible only if Islamabad had obtained sufficiently enriched uranium, not merely the equipment and materials for an enrichment facility from abroad. (Enriched uranium for power reactors has a uranium-235 content of about three per cent, as against a natural proportion of less than one per cent, while the proportion in bomb material is expected to be about 90 per cent. All enrichment is aimed at increasing the uranium-235 content.) The official expectation in Washington was that the first test would be conducted in two or three years' time and a British prediction a year ago was that the bang could be expected within 18 months, which would be by the end of this year. An American Senator recently said that Pakistan would reach nuclear capability by the end of next year. The latest estimate quoted in New Delhi puts the probable time of the first explosion between July this year and September 1982.

Any accurate prediction is clearly impossible without full knowledge of what has already been done or arranged; one must also allow for unforeseen technical difficulties. In most estimates so far, Pakistan's technical capability may have been somewhat overrated. An early plutonium explosion need not, however, be ruled out. And, despite

known and suspected deficiencies there is nothing to prevent Pakistan from producing and exploding even a uranium-235 weapon within a fairly short time; whether it will take one or two or three years, or even longer, is not terribly important. As for any external political constraint, Islamabad went ahead with its bomb project even when the United States tried seriously to deter it; now the USA seems to be offering massive arms aid without requiring General Zia to abandon the project.

This has heightened Indian fears, but reaction is still relatively restrained. Apart from lack of any clear idea in the public mind about what Pakistan has really been up to, one reason may be a reassuring belief that India after all has already accomplished what Pakistan is now attempting. Many people in this country may have been persuaded by the view widely expressed abroad that India has already acquired nuclear weapon capability, if not actually produced the bomb. Once Pakistan makes its first bang there will be a clamorous demand for immediate production of Indian bombs. There may be dismay at the state of Indian preparation and a decision on a crash programme may have to be taken in circumstances which will preclude calm reflection.

FISSILE MATERIAL

Let us examine what was accomplished in 1974. The major achievement—production of a sufficient amount of fissile material for an explosion—had been completed over a period of years. The work, though not specifically aimed at an explosion, had begun with the building and commissioning of a reprocessing plant at Trombay to extract plutonium from spent (used) reactor fuel. Some non-fissile uranium turns into plutonium (which is fissile) in the course of ordinary reactor operation: the problem is to extract the plutonium from the spent fuel. Development of the necessary technology within the country was acknowledged to be a significant achievement long before the Pokharan explosion in

1974. What the evolution demonstrated was technology for conducting an explosion under controlled conditions.

In theory, fissile material is likely to explode as soon as it exceeds a critical mass, a few stray neutrons from the atmosphere can start the fission chain reaction. But such an explosion will neither be controlled, nor particularly effective. A planned explosion must be designed to occur at a predetermined time in predetermined conditions. The most important task is to produce a supercritical mass at a chosen moment. This can be done by bringing two subcritical lumps suddenly together to produce a supercritical one, or an amount of fissile material which is subcritical in its normal state, can be made supercritical by extreme compression.

Though this sounds simple in principle, the technical requirements are highly exacting. The Pokharan explosion was based on the second method, known as implosion, by "imploding" the material, i.e. vastly raising its density by inward pressure exerted by chemical charges. It was thought to supercritical state. There must also have been a source for simultaneous injection of free-neutroning neutrons, as well as an arrangement to ensure that the exploding material would not be immediately scattered by bringing the chain reaction to a premature end. A host of other technical requirements, not least those for safety were involved.

This explosive technology is certainly the basis of the bomb, but the latter entails much else besides. A nuclear device is not necessarily an euphemism for a nuclear weapon. The device that was exploded in the Rajasthan desert could have been the basis for developing the bomb, but a great deal of work would have been needed to produce an operational weapon. It is not merely a question of size but also of a variety of specific operational devices for military application. It would certainly have been possible to complete this work by now, indeed much earlier, but the fact is that it was not even begun. Why the expected follow-up was not undertaken can only be speculated upon.

The 1974 bang created such a hostile reaction abroad that the Government possibly thought it prudent to do—or rather desist from doing—all it could to establish that the explosion had no military aim. On the one hand, there was unconvincing pride in the technological accomplishment; on the other, there was extreme nervousness about international repercussions. Development of PNE (peaceful nuclear explosion) technology was widely advertised, but official spokesmen were also anxious to prove that no weapon programme was intended. Cancellation of, or restrictions on, external assistance for the nuclear power programme heightened this anxiety. It would not be surprising if New Delhi was deterred not only by Western but also by Soviet reaction.

But by objecting any preparation for the bomb, India did not escape the suspicion of having embarked upon it. Since 1974, there have been many references abroad to India as a nuclear-weapon State even specifically to the "Indian bomb". Partly under the influence of such views and partly as a matter of national pride, many Indians too have persuaded themselves that India has already produced the bomb, or at least completed all preparation for it. But I am convinced—and this is not a subjective assessment—that nothing was done to follow up Pokharan with studies and experiments to develop the technology for weapons. Given Mr. Morarji Deas's personal views, there was no question of such work under Janata rule, nor did Mrs. Gandhi encourage it during the first few months after her return to power. One expert, who ought to know ruefully told me late last year that India was like a woman unduly suspected to have lost her nuclear virginity while in fact she had not even engaged in preliminary dalliance.

Misconceptions have sometimes fed on misleading statements about our technological advance. Ever since the late fifties it has often been claimed that India could make the bomb if she wished. The claim made little sense before the plutonium separation plant started working, thereafter—until Pokharan—it was at best a statement of possibility; and the 1974 evolution was only a partial demonstration

of feasibility. But there has been an impression of increasing advance towards the bomb. Similarly the more recent claim that the Indian satellite launch vehicle has the potential of an intermediate range ballistic missile may have led some people to believe that preparations are being made for a nuclear delivery system. But nothing has in fact been done to adapt space rockets to military use so far.

NUCLEAR WEAPONS

Exaggerated notions of what India has already achieved were illustrated by the recent suggestion by Mr. Krishan Kant, the Janata leader that we must "prepare for a hydrogen explosion in the shortest possible time". The assumption, presumably, is that preparations for fusion weapons have already been completed. Mrs. Gandhi told Parliament earlier this month that if Pakistan developed nuclear weapons, India would "respond in an appropriate way". This is an unreasonably position but what does it imply? One cannot, of course, expect the Prime Minister to spell out her plans but it is to be hoped that she has given some thought to the gap between the reality about the Indian nuclear option and some of the popular notions about it.

I do not think it is already time to decide, if not actually embark on an Indian bomb programme. But it is certainly time to initiate more serious studies than seem to have been conducted so far on the strategic and political implications of a Pakistani bomb and on possible Indian responses in such situations as can be conceived of. This would obviate the need for any hasty decision under the pressure of clamorous public opinion. What is more important is to give greater substance to the technical option, so that the technology would not be wanting if a political decision were made. This does not mean preparing for the bomb; it means completing the technical base. It may be argued that even such work would have a momentum of its own which would end inevitably in bomb manufacture. It need not under a firm political leadership; but political, or lay public demands would be pathetic without the technical means to satisfy them.

BIG POWER 'SNOOPING' MAY STRENGTHEN BOMB LOBBY

Madras THE HINDU in English 1 May 81 p 1

(Article by G.R. Reddy)

(Text)

NEW DELHI, April 30

American and Soviet satellites are reported to be scanning the Pokaran area of Thar desert and the Riba Koh hills in Baluchistan for signs of any digging or tunnelling activity suggesting preparations for nuclear tests by India and Pakistan.

There is nothing that India can do to prevent this snooping except monitor the movements and identify the presence of such spy satellites operating over the sub-continent.

Though these satellites photograph ground activity with remarkable accuracy and transmit the pictures by television to their mother stations, the data has to be carefully analysed and evaluated by experts to come to any definite conclusion about the nature and purpose of it.

The assessment is never regarded as 100 per cent reliable unless it is corroborated by information obtained from other sources.

A few months ago the U.S. Government got excited when it received reports based on photographic data provided by spy satellites that India was preparing for another nuclear test at Pokaran in the near future.

But the bubble was pricked when India told the U.S. that the alleged digging activity related to some normal preparatory work by some army units for testing its weaponry at one of the military firing ranges there.

But there are renewed reports that the U.S. has started collecting fresh

information about the alleged preparations under way at Pokaran for another test in the near future.

The Soviet Union has been engaged in similar scanning of the Pokaran area, except that Moscow does not publicise its activities and jump to abrupt conclusions based on incomplete data like the U.S.

Edgy reaction: But the edgy reaction of the U.S. reflects to some extent its own discomfiture over the difficulties it was encountering in an attempt to enforce a new global code of nuclear conduct on the basis of its own non-proliferation legislation.

India is not the only country that has refused to comply with the U.S. demand for placing its entire nuclear programme under stringent international supervision.

The Euratom is leading a revolt in the West against the U.S. bid to re-negotiate the existing cooperation agreements to bring them in line with the provisions of the Non-Proliferation Act.

A close U.S. ally like Japan has chosen to await the outcome of the American pressure on Euratom before submitting to fullscope safeguards, while Algeria and Brazil have rejected them.

The U.S. has so far succeeded in revising its agreements only with Australia, Canada and Morocco. The more prominent members of the so-called London Club of nuclear suppliers, like France and West Germany, have chosen to ignore the constraints collectively agreed upon by them.

There is little likelihood of India being

subjected to wider political pressures if it chooses to go ahead and reproduce the spent fuel after the termination of the Tarapur agreement. The U.S. has been skilfully exploiting the threat of a nuclear test by Pakistan to frighten India about the dangers of proliferation in the sub-continent.

Bomb lobby: But the very threat is leading to renewed pleas from influential groups in Parliament for exercising the nuclear option before Pakistan starts making the bomb in the not too distant future. The bomb lobby in India will become stronger if the U.S. tries to indulge in arm-twisting to compel Delhi to keep out of the nuclear race.

According to Indian experts, it will become somewhat clear by the time the Indo-U.S. nuclear talks are resumed, how far the Reagan Administration is prepared to go in amending its nuclear Non-proliferation Act to make the law more workable and less counter-productive in its application.

The General Administration Office (GAO) which has been reviewing the working of the Act at the instance of the U.S. Congress, has not yet submitted its recommendations for improving the Act.

The Soviet Union, which is no less resistant to offer safeguards on the nuclear materials by it, prefers to let the International Atomic Energy Agency (IAEA) negotiate and settle the inspection procedures and the application of the so-called pursuit clauses.

It does not allow its bilateral relations with a country like India to be soured by attempting to enforce these safeguards on its own.

JANATA EXECUTIVE DISCUSSES INDIAN NUCLEAR POLICY

Bombay THE TIMES OF INDIA in English 2 May 81 p 1

[Text]

P NAGAR (Bangalore), May 1.

THERE was a shrill demand for the production of an Indian nuclear bomb in the meeting of the national executive committee of the Janata party here today, with Mr. Morarji Deasai admitting that he was in a minority in continuing to advocate the use of nuclear power for peaceful purposes only.

The term race in the subcontinent appears to have induced many pacifist members of the committee to take a second look at India's nuclear objectives. But opinion was more or less evenly divided, in the words of Mr. Ramakrishna Hegde, general secretary.

Mr. Krishna Kant led the nuclear bomb lobby, buttressed by a document he presented to the executive committee in which he argued that the time had come for India to exercise the nuclear weapon option to safeguard its freedom and integrity. Many members also strongly felt India must make the bomb as a deterrent to Pakistan's own efforts to produce one, coupled with its arming by the U.S.

RESERVATION ISSUE

Mr. Deasai and Mr. Pilib Mody, however, were among those who pleaded that India should not rush into the nuclear race out of panic.

The former Prime Minister recounted to the members India's nuclear position before and after independence and asked: "Why should we depart from it?"

Mr. Deasai recalled the stand taken by India in the United Nations

and his own speech delivered there as well as his advice to super powers. According to him, the need was for establishing friendly relations with other countries, particularly the neighbouring countries.

Mr. Mody felt that the production of a nuclear bomb by India would not solve the tensions in the region. Other methods, like diplomatic pressure, should be tried.

Whether or not India should produce a nuclear bomb is still being discussed by the Janata leaders. The topic forms part of a resolution on the political situation which will be finalised tomorrow.

Also being considered by the executive committee is a resolution on reservation for the scheduled castes, tribes and other weaker sections. While there is agreement that the reservation scheme should continue as long as disparity and discrimination scheme should continue as long as disparity and discrimination exist, certain anomalies have been noticed. Those who had benefited from reservation had become a vested interest, resulting in the denial of the benefits to the poorer sections, some members said.

According to Mr. Hegde, Mr. S. Nisingappa and Mr. H. V. Kamath were not opposed to reservation, but they wanted reservation to be made in government employment and seats in professional colleges on economic grounds and not on a caste basis. One of the members at the executive committee today also advocated the same idea and pleaded for reservation in favour of all people living below the poverty line, irrespective of caste.

'HINDU' CORRESPONDENT REPORTS ON WASHINGTON TALKS

Sethna, Price Meeting

Madras THE HINDU in English 17 Apr 81 p 1

[Article by N. Ram]

[Text]

WASHINGTON April 16

India's entirely peaceful intentions in harnessing nuclear energy and the big difference between conducting nuclear explosions and acquiring nuclear weapons, were underlined by Dr. H. N. Sethna, Chairman of the Atomic Energy Commission, in preliminary discussions on Indo-U.S. nuclear relations here yesterday.

The four-day meeting between the head of the Indian delegation to negotiate bilateral nuclear matters with the U.S. and Mr. Melvin Price, the powerful chairman of the House Armed Services Committee, found the latter underscoring the 'need for restraint' by India, given its 'proficiency' in the nuclear field.

Dr. Sethna stressed the point that the peaceful nuclear explosion (PNE) by India in 1974 should not be considered the testing of a nuclear weapon.

He argued that PNEs could not conceivably be mixed up with the development of nuclear weapons. Anybody who knew the technology knew the weapons design, knew this. It could not be delivered as a nuclear weapon because of its characteristics — either by a rocket or an airplane.

A senior Congressional aide who participated in the discussion acknowledged to Dr. Sethna that he knew what he was saying, but raised this question: How can you convince people like the lay public, or the members of Congress, that if you have the detonation of a nuclear device, it is no weapon? Anybody who knows the situation who knows the technology, knows it isn't.

Impassioned: "God bless you, Dr. Sethna," the Chairman of the Indian Atomic Energy Commission was told

in the discussion. "If you can convince the people of that thing, my hats off to you. But if you can't, would you consider going further? If you have any further leads, would you have access by foreign nationals — in respect."

Mr. Melvin Price, a veteran in nuclear affairs, picked up the point about third parties respecting experimental detonations. A Congressional source described the response of Dr. Sethna thus: "He thought about it. He said, 'Well, No. We won't let you get near it. Because you people don't let in anyone, either or words to that effect.'"

Mr. Price reportedly took up another angle in the discussion. We realise, he said, that the Pakistanis are working on nuclear weapons. We know that. The U.S. is doing everything possible to discourage or prevent anything like that.

Restraint call: Now, we know the Indians' proficiency in the field, remarked Mr. Price who recently visited nuclear facilities in India and is believed to have been deeply impressed. That's why you've got to exert caution in anything you do. Restraint, because of what it could do to destabilise efforts in the area.

"I presume they took due note of what he said," the Congressional source remarked to THE HINDU. "A man with his background, that was his one concern."

The 76-year-old Mr. Melvin Price has been on the Hill since 1963, starting out as a Congressional aide. The last chairman of the Joint Committee on Atomic Energy before that powerful Congressional body was wound up, he has for long supported a vigorous nuclear programme for the U.S., including the fast breeder.

He has voted in favour of Tarapur shipments, although he was perhaps the first American Congressman to speak out against India's PNE in May 1974.

About the position of the Indian side as presented on the Hill, the Congressional source revealed: "I was so surprised and happy to hear that they would like to see that treaty continue. And the thing they stressed, you know, is that under the circumstances they have the safeguards that are imposed this way. And if you don't have such an agreement, these safeguards will be degraded. That's all there is to it."

In a controversial briefing to American correspondents based in India, Mr. Eric Gonsalves, Secretary in the External Affairs Ministry, was earlier quoted as presenting the Indian position on Tarapur thus: "So long as you continue to supply fuel, then your fuel is under safeguards and cannot be used for any purpose except by joint agreement. The moment you break the agreement, the fuel ceases to be under safeguards."

The discussion on the Hill on Wednesday, attended by Mr. Gonsalves and two other Indian diplomats, was held in a context where the Tarapur agreement is widely believed to be on the verge of unilateral termination.

If the reading is confirmed in Thursday's detailed discussions with Mr. James L. Malone — the State Department's chief but yet-to-be-confirmed official in charge of nuclear non-proliferation — what remains to

be done is to negotiate the modalities of termination.

That exercise will, of necessity, focus on the sensitive questions of existing IAEA safeguards on plant, equipment and fuel supplied by the U.S. and on reprocessing the spent Tarapur fuel by India.

Declaration: Contrary to the persistent version put out in sections of the American press, it is clear that it is not India which is seeking an "amicable" or any other type of end to the agreement — as a way of removing a major "deteriorating element" in bilateral relations.

Termination of the Indo-U.S. agreement for nuclear cooperation can only be a direct consequence of the U.S. reneging on a supply commitment made for a continuous period up to 1991, and failing to fulfil another vital component of the agreement — cooperation in the technical exercise of "joint determination" on the safeguardability of the Tarapur reprocessing facility.

The 1963 agreement has the force of an international treaty and, even by the acknowledgement of the U.S. on a number of occasions in an earlier period, it should not be overridden by domestic legislation.

Rejection of Safeguards

Mauras THE HINDU in English 18 Apr 81 p 1

[Article by N. Ram]

[Text]

WASHINGTON, April 17

The United States has officially notified India that it has decided unilaterally to terminate the Tarapur agreement—and will, to boot, insist on maintaining safeguards and "control" over reprocessing spent Tarapur fuel even after the life of the agreement.

Dr. H. N. Sethna, Chairman of the Atomic Energy Commission and leader of the Indian delegation that conducted discussions on the Indo-U.S. nuclear relationship here on Thursday, deplored the decision and rejected out of hand the idea of maintaining safeguards or any U.S. say over reprocessing spent Tarapur fuel in the post-agreement period.

"It is like asking for a divorce and demanding that the other party not marry anybody else," was the way a senior Indian diplomat described the U.S. stance to the officials across the table.

The tearing up of the 1963 agreement that has the force of an international treaty has introduced a strong element of deterioration in Indo-U.S. bilateral relationship.

Quincy attempt: The bitterness was heightened by what appeared to the Indian side to be a clumsy and provocative attempt by the Reagan Administration to call the tune on Tarapur after reneging on a nuclear supply relationship originally planned to last for not less than 30 years.

The message on behalf of the U.S. Administration was conveyed by Mr. James L. Malone, a former nuclear broker appointed by Mr. Ronald Reagan to take charge of "nuclear non-proliferation" in the State Department and existing confirmation.

Mr. Malone is co-author of a transition team report on nuclear policy that recommends that "non-proliferation policy should be determined and implemented in the context of overall U.S. international security requirements. Accordingly, the policy of denial of U.S. nuclear supply should be applied only to countries posing a threat to U.S. international security interests."

The quality of Mr. Malone's knowledge and handling of nuclear relations with India appeared to be as subtle or as sophisticated as the above quotation suggests. The contrast with senior State Department officials, such as Mr. Myron B. Kruttsch, with whom Indian officials have negotiated

nuclear matters in the past, could not have been drawn more sharply.

But, then, this is Mr. Reagan's Washington.

The Reagan Administration has justified its decision to end the contracted, treaty relationship with India ostensibly on the ground that it sees no way of negotiating Tarapur fuel supplies through opposition on the Hill—given the Nuclear Non-Proliferation Act of 1978 and the Congressional mood.

The Indian side made it clear that it wanted the 1963 agreement to continue. But it had come quite prepared to discuss winding it up at the instance of the United States, on the understanding, of course, that both sides would be released from the obligations and would have no rights or claims against each other after the life of the agreement.

India reneges—and will keep that way—absolute title to Tarapur fuel.

Indian spokesmen, including Mr. Eric Gonsalves, Secretary in the External Affairs Ministry, have publicly warned the U.S. that the moment you break the agreement, the fuel ceases to be under safeguards.

The responsibility for implementing safeguards on Tarapur was relinquished by the U.S. nearly a decade ago. Safeguards are currently maintained by the International Atomic Energy Agency (IAEA) under a bilateral safeguards agreement signed in January 1971.

Firm rejection: If any doubt remained about India's firmness in rejecting the idea of post-agreement safeguards on Tarapur, or any degree of U.S. "control" over reprocessing spent Tarapur fuel, it was dispelled by the Chairman of the Atomic Energy Commission in Thursday's encounter with Mr. Malone and Co.

Alluding to the U.S. Administration making Congress the cause of the rude break in Indo-U.S. nuclear ties, Dr. Sethna informed the negotiations on the other side that he wondered whether even two of India's 544 members of Parliament would stand for the maintenance of safeguards after the scrapping of the Tarapur agreement.

He also appears to have left little doubt that no Government in India could contemplate accepting the post-agreement terms proposed by the U.S.—concerning safeguards and a say in reprocessing spent Tarapur fuel.

In order to gain a bit of time to decide on what exactly is to be done next, both sides might go through the motions of "continuing discussions" on Tarapur.

The case put before the U.S. Administration by the Indian delegation headed by Dr. Sethna is essentially this: Con-

tinuance of the 1963 agreement is the best possible course, but since the U.S. has concluded it will not be possible to continue the supply relationship, cancellation by mutual consent can be agreed upon on the basis of a release of both sides from the obligations.

Regarding the question of whether the U.S. has any right, title or interest in the Tarapur spent fuel, the concept of sale itself involves the transfer of title.

Under the agreement, the U.S. has a right to require the return of the spent fuel under a narrow and specific set of circumstances which do not apply to the situation. Negotiations began in 1976 concerning proposed return of the spent fuel but conditional on supply of uranium as scheduled broke down, and the U.S. dropped its demand for the return of the spent fuel.

The Nuclear non-Proliferation Act of 1978 attempted to override the 1963 agreement by requiring that in every proposed agreement, the safeguards would continue regardless of the pendency or termination of the agreement.

The U.S. would also have a "right" to demand return of the spent nuclear material if IAEA safeguards were removed or if a peaceful nuclear explosion (PNE) took place. But by no stretch of the imagination could these one-sided "rights" be read into the agreement.

In March 1978, India announced at a consultative committee meeting that "the Government of India would retain the title of the spent fuel." The U.S. did not contest this claim, and President Jimmy Carter in statement on March 30, 1979, explicitly recognized it.

Only recently has the United States attempted to challenge India's total con-

trol over the fuel, by claiming that "joint determination" as provided for in the 1963 agreement is as good as a veto on reprocessing. India does not accept the claim, but the relevant point here is that even in this, there is no U.S. assertion of a right to the return of the spent fuel.

Integral part: Reprocessing is provided for in the original Tarapur agreement as an integral part of a process. The U.S. has blocked this process and "cannot compound the offence" by pressing a claim either to return or to an interest in disposition of the spent fuel.

While negotiating the last two Tarapur shipments through Congress, the U.S. Administration has drawn repeated attention to the legal and other strong points in India's case on Tarapur and recognized "difficulties".

Specifically, the point or "difficulty" that has drawn acknowledgement is the "unique" character of the 1963 bilateral agreement that—in the event of a breach by the U.S.—enables India to claim it is "released from its obligations" regarding reprocessing and all.

The case as India's nuclear negotiators see it, appears to be "unreversible." But there is every indication today that the Reagan Administration's answer threatens to raise or escalate the profound differences on Tarapur to the level of a first-rate crisis in bilateral relations—assuming, of course, that this Government of India holds firm.

In point of time, the development comes close to, if it does not cojoin with, the highly tension-raising decision to rearm the Pakistani dictatorship.

Indian Grievances Told

Madras THE HINDU in English 20 Apr 81 p 1

[Article by N. Ram]

[Text]

From N. Ram

WASHINGTON, April 19

With the United States notifying India on Thursday of its decision unilaterally to terminate the Tarapur supply relationship while insisting on maintaining safeguards even after the life of the agreement, the political question arises: Why haven't the two sides, especially the Indian side, announced the immediately to their own people and to the world?

Official spokesmen on both sides will neither deny nor confirm the story that cannot for much longer be denied official status. The stance, by bilateral arrangement, for the moment is that "discussions will continue".

The proposal on the Indian side is to invite the U.S. to continue the discussions in India, and a visit to New Delhi by Mr. James L. Malone, the yet-to-be-confirmed State Department personage in charge of U.S. "non-proliferation" policy, is on the agenda—perhaps in July-August.

Meanwhile, it is known that the bilateral discussions on Tarapur that have gone on for over three months in New Delhi and Washington have included the exchange of communications—probably a detailed side memorandum prepared by the nuclear establishment firmly outlining the Indian position.

During a period of transition between two administrations and some overlap, the U.S. side appears to have underestimated the strength and assertiveness of national opinion in India on Tarapur, that manifests itself in Parliament and elsewhere and cannot be reduced to the difference in approach between Mr. Morarji Desai and Mrs. Indira Gandhi as Prime Ministers.

The basic Indian negotiating position, responding to this opinion, can be summarised as follows: It is best to continue the 1963 agreement of Indo-U.S. nuclear cooperation, with the United States correcting its unreliability as a supplier of low-enriched uranium fuel and also honouring other obligations such as completion of the technical exercise of joint determination on the safeguardability of the Tarapur reprocessing facility.

But in the event of a unilateral decision to terminate the agreement, the basis cannot be anything other than a release of both parties from treaty obligations and an understanding that mutual

"rights" or "claims" be given up in the post-agreement period.

This means, from an Indian standpoint, at least two things. First, "the moment you break the agreement, the safeguards are off". The United States appears to be making much of the point that this is the first time an (IAEA International Atomic Energy Agency) safeguards agreement will be terminated.

In relation to this, the Indian side makes the counterpoint that it is the first time that an international agreement on nuclear cooperation, which in this case has a unique treaty character, is being unilaterally broken.

Reprocessing can't be put off

Secondly, reprocessing of Tarapur fuel cannot be put off much longer—whether the agreement is in force or not. If the agreement is in force, the technical exercise of "joint determination" of safeguardability—which the United States is as matters stand refusing to go through—will be sought to be completed.

If the agreement is terminated and the safeguards are off, reprocessing of Tarapur fuel becomes entirely India's business, with the question of a role for the U.S. not arising.

To sum up, India's two grievances against the United States as Tarapur partner are: It is unreliable as a fuel supplier and obstructive of reprocessing, that the 1963 agreement envisages as an integral part of one process. The results of the unreliability as a partner in nuclear cooperation—a phenomenon that began in the mid-1970s—have very seriously affected the efficient functioning of the Tarapur power station and, consequently, a significant sector of economic activity in the Bombay region.

The obligation imposed on the United States to supply low-enriched uranium fuel for "the continuous and efficient operation" of the Tarapur plant has no loophole, as State Department internal documents were in the habit of acknowledging routinely until at least 1976.

Delay & Uncertainty

Nevertheless, the charts show that delay and uncertainty concerning uranium supplies have been a built-in feature of the Indo-U.S. nuclear relationship since 1975. A chart prepared by the Indian Atomic Energy Commission shows that delays in fuel supplies

for Tarapur—calculated from the dates of applications—begin from a zero level in July 1973, climb upward in steps through 1974 and 1975, rise very steeply and almost vertically between July and October 1975, and continue their climb after 1976.

The Indian study records specifically that total delay from the date of applications for Tarapur fuel was 3 weeks for April 1974, 20 weeks for March 1975, 49 weeks for July 1975, 69 weeks for October 1975, 78 weeks for January 1977, 72 weeks for November 1977, 104 weeks for September 1978.

With the clock registering the delay ticking steadily, the entry against the application made in August 1979 is an elongating question mark while the entry against the application of September 1980 is a blank.

The Indian Atomic Energy Commission analyses offers an instructive calculation in political terms. The share of the responsibility in Tarapur fuel supply delays of the Nuclear Regulatory Commission and Congress together (as against the U.S. administration) fluctuates widely between 30 per cent and 100 per cent. The contribution made to the delay by the administration, upto March 1975, peaks to 70 per cent in 1977—with a question mark after 1979.

This is the objective and stark record of the U.S. as a Tarapur fuel supplier in the recent period.

Storage Problems

Regarding reprocessing of spent Tarapur fuel, it is known that as a direct result of the refusal to carry out "joint determination" of safeguardability—an obligation imposed by the agreement—the storage problems in Tarapur are serious indeed. Reprocessing of Tarapur fuel is expected to become an absolute physical and security necessity by the third quarter of 1982, with the pool becoming full and racks becoming totally unavailable.

The reprocessing technological process developed by Indian scientists and engineers appears to be rated very highly by specialists in the United States and elsewhere. The process is well known in the literature, but it is being mentioned this is the first time it is being applied on the scale.

There have been reports of a tendentious and persistently misleading nature in sections of the Western Media suggesting India is about to begin

reprocessing spent Thorpu fuel in order to get "weapons grade" plutonium. The latest in the series appears with the title "India begins work on atomic bomb-grade material"—a reference picked up from the annual report of the Department of Atomic Energy to make the recurrence and story point that "India yesterday announced it is reprocessing the spent fuel from its atomic power plants to recover plutonium that could yield the explosives for a nuclear bomb."

Not subtle timing

The official announcement, concerning plans to reprocess Rajasthan fuel under IAEA safeguards, came some time ago. The test run is expected in May-June, because this is the first time India is undertaking reprocessing on a commercially usable scale. The timing, origin and purpose of the scare story, given the congressional and the rest of the political context in the United States, are certainly not subtle.

On another front in the Indian nuclear effort—which also tends to get represented in evocative terms in U.S.

congressional discussions, despite the obvious fact that the thousands of technical specialists available in the country know much better—progress has come sooner than the two to three years predicted in a congressional majority report put out at the end of 1980.

This is to say—and it will no doubt get occasionally blown up when what is known in India comes to the attention of the U.S. Congress and media—one mixed oxide fuel plant is ready.

A bigger one is under construction. As a matter of fact, Indian engineers and scientists made the first mixed oxide fuel for experimental purposes as early as 1968-69. Among the "non-proliferation warriors" here, "mixed oxide fuel" with reference to the Indian nuclear programme is very nearly in the same category as "reprocessing" words to frighten children with.

The dictum, so far as the Indo-U.S. nuclear relationship is concerned, appears to be the modification of an old liberal saying: Facts are immaterial, opinions can run riot.

U.S. TRANSITION TEAM NUCLEAR POLICY REPORT DESCRIBED

Madras THE HINDU in English 15 Apr 81 p 9

[Article by N. Ram]

[Text]

WASHINGTON, April 14

It is important that the United States treat proliferation primarily as a security problem... the United States should make every effort to restore its credibility and reliability as a nuclear supplier... the policy of denial of U.S. nuclear supply should be applied only to countries posing a threat to U.S. international security interests.

The Reagan administration's nuclear export or non-proliferation policy is due to be announced soon, as Senator John Glenn has been reminding it. But the main directions are already available in the classified transition team document titled "Focus of U.S. nonproliferation efforts," quoted above.

"I know that they rate coming up with changes in our nuclear export policy," Senator Glenn said in an interview with THE HINDU. That has already been evidenced by the proposal for a new nuclear policy by the transition team.

Mr. Glenn, recalling a statement by the U.S. Secretary of State Mr. Alexander Haig, is waiting somewhat impatiently for the detailed statement on the Reagan administration's nuclear non-proliferation policy that should have come by now.

He is particularly interested in the connection between this and the perennial question of a proposed revised to the Pakistan-related Symington Amendment, and also in implications for the nuclear supply relationship with India.

State Department officials, however, say that the area is still "under review" and the policy might take more time to surface than Mr. Haig indicated at a recent hearing before the Senate Foreign relations committee.

Sensitive stage: But nobody denies that the kernel and essential premises of the new nuclear export policy are available in the transition team report. Particularly for India, the contents of the documents should be of more than academic interest — considering that the Indo-US nuclear relationship is at a sensitive stage that looks like a prelude to termination imposed by unilateral, anti-treaty and anti-contractual action by the United States.

Far from contesting the reading or expectation, U.S. administration officials say in remarks to the Indian press that the outcome of the present talks on Tanapur is bound to be negative.

While pointing out that a position indicated in a pre-election platform should not be taken as binding, they agree that there is no indication whatsoever that the Reagan administration will take on congressional opposition or prepare to go through a painful process each time a Tanapur shipment is called for.

And this for the sake of a cause specifically opposed by the Republican party platform and by an instructive mix of ultra-conservatives, moderates, and liberals in Congress.

The transition team report is a body of assertions and recommendations not inhibited by the need to be diplomatic with the countries with nuclear relations with the United States, or sophisticated with respect to the anti-nuclear domestic lobbies' gains, authority and relevance from the fact that its co-author is Mr. James L. Malone, a controversial and self-registered nuclear broker nominated to take charge of Reagan non-proliferation policy at a senior level.

The gentleman's nomination as Assistant Secretary of State for Oceanic, International Environmental and Scientific

Affairs is a severe indictment if not a provocation to domestic anti-nuclear sentiment. It has been held up by Democrats in the Senate Foreign Relations Committee on general policy and "conflict of interests" grounds.

Indian officials, including Mr. Eric Gonsalves and Dr. Sethna, are scheduled to meet Mr. Malone who will figure heavily in the State Department discussions on Tanapur despite his lacking formal authority as of today.

Guidelines: The basic policy guidelines of the Malone transition team report are, first, that U.S. non-proliferation policy, having failed to produce results, must be relaxed; secondly, that the United States should subordinate non-proliferation to its security concerns; and, thirdly, that nuclear supply should be denied only to those countries posing a threat to U.S. international security interests.

The report starts off with the observation that the "non-proliferation policy of the previous administration failed to reduce the potential of additional countries for obtaining nuclear explosives." The broadly applied measure emphasised by the policy to prevent "reuse of the nuclear fuel cycle" for power generation included attempts to reverse the reprocessing programmes of advanced industrial countries. They "alienated those nations whose support is vital to combating proliferation in regions where its potential is a serious threat."

The United States, the document notes, "is becoming isolated on major non-proliferation and nuclear fuel cycle issues."

The centrepiece of the new policy would be to treat proliferation primarily as a security problem. The unnecessary U.S. efforts aimed at countries posing no risk could be discontinued. Regarding nations where the potential for acquisition of nuclear explosives is a

risk to US security interests. US efforts should be vigorously increased, as each situation requires.

Eight criteria

Eight criteria are proposed as the basis of the Reagan administration non-proliferation policy.

1) The United States should make every effort to restore its credibility and reliability as a nuclear supplier. It should enhance its role in international nuclear commerce and thus strengthen its ability to achieve its non-proliferation objectives.

2) Agencies with responsibility for non-proliferation policy should be "restructured" in order to provide for "careful formulation and implementation of such policy." Specifically, the responsibility of the Nuclear Regulatory Commission (NRC) for the issuance of export licenses should be transferred to the State Department.

The international activities of NRC should be confined to "cooperation regarding health and safety matters, safeguards and physical protection." With respect to export licensing, NRC's role should be a purely consultative one.

A newly created open bureau would have sole responsibility for nuclear affairs within the State Department. It would lead all such action within the administration. "Close" should be appointed to positions with responsibility for non-proliferation matters should share the view of Mr. Reagan that nuclear energy is vital not only to the nation's energy but to that of US trading partners.

3) Non-proliferation policy should be determined and implemented in the context of overall US international security requirements. Accordingly, the policy of denial of US nuclear supply should be applied only to countries posing a threat to US international security interests.

4) Existing international arrangements such as the International Atomic Energy Agency (IAEA) and the Non-Proliferation Treaty (NPT) regime should be affirmed as the most credible institutional approach to dealing with proliferation. The United States should work to strengthen these institutions through better financial contributions, manpower and technical advice.

5) The US Nuclear Non-Proliferation Act of 1978 and the Atomic Energy Act of 1954 should be revised as soon as possible to "redress the inadequacies of the policy of the last four years." Statutory revisions should remove restrictive application of new conditions for export with respect to previous supply commitments, "deserve unilateral imposition of new controls as a condition of supply," restore US participation in the international

development and management of the nuclear fuel cycle, and affirm that existing supply commitments will be honoured and that there will be continuity of supply.

These are the basic criteria proposed for a new nuclear non-proliferation policy for the United States, and the confidential document follows these up with proposals for immediate legislative and technical action.

President Reagan, it is recommended, should take the earliest opportunity to rebut Mr. Jimmy Carter's statement on nuclear non-proliferation issued in April 1977. Consultations are suggested with officials of "major industrialized nations and leading developing countries" to "renew a constructive dialogue regarding non-proliferation objectives and international nuclear commerce, including supplier control over reprocessing and plutonium use."

Countrywide and programme-wise, the Reagan administration policy should mean that—Requests for retransfer for reprocessing in the UK or France will be approved without linkage to other issues. Reprocessing of US-supplied material in a country with "no proliferation risk (such as Japan) will be approved when a need for such reprocessing is established."

Exceptions: Use of plutonium separated in the UK or France can be approved for use in recycle or advanced reactor programmes. The blank cheque given to those two countries should be extended to "other European nations that pose no proliferation risk on a case-by-case basis and, after further review, on an agreed programme basis."

Likewise, use of plutonium separated in other countries adhering to NPT that "pose no risk," such as Japan, can be approved for use in recycle and advanced reactor programmes on the same basis.

Finally, "an aggressive programme should be developed immediately to provide the basis for concluding additional enrichment contracts with recipient nations," which should include attractive pricing and flexibility and the provision of a clear US obligation to deliver enriched material in accordance with an agreed delivery schedule.

And, so far as existing contracts are concerned, they should be reformed to "relieve recipient nations of obligations if export licenses are not issued by the United States due to imposition of new conditions after the date of the contract."

6) Pending the legislative revisions, there should be immediate action to re-establish US credibility and reliability. This would include summary approval of requests for retransfer of

nuclear material for reprocessing in France or the United Kingdom, strict adherence to time constraints for executive branch processing of export action, and resort to executive orders to bypass NRC in case of delay.

7) The United States should seek to develop new and expanded commercial relations in the field of nuclear energy with nations which share US non-proliferation objectives.

8) The United States should not interfere "pursuit of legitimate energy security objectives by other nations... in such sovereign matters." Likewise, US nuclear energy programmes should be encouraged to proceed.

Fast failure: It should be recognized that past US attempts to thwart civil reprocessing programmes of several major industrialized nations and to resolve domestic environmental problems in some recipient States had "no real effect on controlling proliferation and only served to injure US international relations." These practices should be abandoned.

Development of the fast breeder and other advanced nuclear fuel cycles, enlargement of enrichment capacity, and construction and operation of reprocessing and recycle facilities should be supported to provide for long-term US energy needs. And such technology should be shared with nations "demonstrating a legitimate need."

The Malone approach to nuclear non-proliferation is notable for proposing the complete liquidation of objective international norms. Nor is even a pretence of even-handedness sought to be maintained.

On top of the existing discrimination in the NPT regime between the nuclear and the non-nuclear weapons club, a new discrimination directly determined by US "security"—or rather international policy—interests will be imposed.

What will be left of a "non-proliferation" policy once it is fitted into the "national security" framework of one State can well be imagined.

Superficially, some of the elements in the policy recommendation appear to benefit Indo-US nuclear relationship—for example, the formulations concerning retroactive application of new conditions for export and unilateral imposition of new supply conditions.

But a more careful reading shows that if this is going to be the basis of Reagan administration policy, the Tarpur relationship will probably fall by the wayside on US "security interest" grounds.

How else is one to interpret moves toward the unilateral termination of a nuclear supply relationship that is enshrined in an agreement with the force of an international treaty and is supposed to be guaranteed until 1983?

TARAPUR UNIT 'SICK' FROM U.S. SHIPMENT DELAYS

New Delhi PATRIOT in En. 1st 19 Apr 81 p 3

[Text] The Tarapur Atomic Power Station worked only to about 49 per cent of its capacity during 1980-81 because of continued difficult fuel situation, reports UNI.

This was because the United States did not fulfil its commitment to supply uranium for the station.

The two units of the Tarapur station generated about 1646 million units of power in 1980-81 (up to February last), of which 683 million units was supplied to Maharashtra and 849 million units to Gujarat.

Even though the unit-wise power levels were restricted to 160 mw each to conserve the available fuel--because of the uncertainty in the supply of enriched uranium, the station achieved the capacity factor of 48.9 per cent, according to the annual report of the Department of Atomic Energy for 1980-81 presented to the Lok Sabha.

The report said the Government has told the USA that it would not accept any conditions outside the framework of the existing cooperation agreement of 1963 between the two countries.

The fuel situation at the station, according to the report, continues to be difficult. An overdue consignment of 19.8 of enriched uranium applied for in August 1979 and scheduled for delivery between February and September last year has not yet been received.

Another application for 19.8 tonnes of enriched uranium was made in September 1980 for delivery between March and September this year.

The report says that the United States has been informed that the continuing delays and uncertainties in the fuel supply cannot be accepted.

Meanwhile, the other two nuclear power stations under construction, the one at Madras and that of Narora, in Uttar Pradesh have recorded 'steady progress.' The report says that the heavy water plant at Kota is practically ready except for some work relating to insulation piping. A 'substantial' part of the plant has been commissioned and it should be fully operational by November next. A pilot plant to establish the feasibility of setting up heavy water plants based on ammonia-hydrogen exchange process, independent of the fertiliser plants is also being set up at Baroda.

DEFENSE STUDIES EXPERT ADVOCATES N-WEAPON DEVELOPMENT

Bombay THE TIMES OF INDIA in English 26 Apr 81 Supplement pp 1,4

[Article by K. Subrahmanyam, director, Institute for Defence Studies and Analyses: "Bomb--The Only Answer"]

[Text] Pakistan's development of nuclear weapons will have grave and irreversible consequences for the sub-continent and India will respond in "an appropriate manner" to any such development, said the Prime Minister in the Lok Sabha earlier this month. The stage has now been set for an intensive debate on the issue whether this country should prepare itself to exercise its nuclear option.

Unfortunately, the Indian nuclear debate has not so far been conducted seriously or logically. It gets lost in platitudes, sentimentality and generalised superficialities. Its level of comprehension seldom rises above that of popular Western magazines.

In all the five nuclear weapon powers and two clandestine nuclear weapon powers the decision to go nuclear was taken in secret without any public debate. However, in France though the decision was taken in great secrecy by M. Felix Gaillard heading an interim cabinet, yet there was considerable public debate at that time. It is time that in this country also we moved forward to a meaningful debate on the issue.

One should start with a clarification. There is an impression among many in this country that having conducted a nuclear test India has already become a nuclear weapon power with a few bombs in her arsenal. This is totally incorrect.

Irrefutable Evidence

Whether many Indians who argue on the basis of this assumption know it or not the foreign powers which are continuously watching India know that this country does not have a nuclear arsenal. This is the reason why while President Carter invoked the Symington amendment against Pakistan he did not do so against India. It is difficult for a country to keep its arsenal a secret. The CIA came to suspect that Israel had an arsenal because Israeli fighter bomber aircrafts were noticed practising toss-bombing.

An ex-Air Force officer had recently pointed out there is no evidence of the Indian armed forces having a doctrine for use of nuclear weapons. Certain arrangements for command and control of the weapons will have to be made and these cannot be kept secret in a country where the parties now in the opposition were in power only 16 months ago. It is also widely-known that the Trombay reprocessing plant which reprocessed plutonium for the Pokharan explosion has been shut down for renovation since 1975. Therefore the argument that India should be having a few bombs in the basement has no substance in it.

Let us now look at the developments across our border. It is difficult to take General Zia-ul-Haq at his word. He has broken his solemn assurance, repeated 17 times, that he would hold elections. He talked about his great regard for the former Pakistani Prime Minister, Mr Bhutto, immediately after the coup d'etat and he declared that no harm would come to him. Thereafter he deliberately proceeded to get him hanged.

The government of Pakistan is unable to convince even the United States, which is currently engaged in fitting Pakistan into its framework of strategic consensus as a front line state, that it is not making nuclear weapons. American senators, congressmen, academics and officials who have visited Pakistan have all gone away with the conviction that Pakistan is bent on reaching nuclear weapon capability. There is not one statement from any Western observer--most of whom are sympathetically disposed towards Pakistan--that they are in a position to accept Gen. Zia's assertion on the peaceful intent of his nuclear programme.

Gen. Zia himself admits that the Pakistani scientists are working on uranium enrichment. Besides, we have the irrefutable evidence painstakingly compiled by the Dutch government in its report on "The Khan Affair," how Dr A. Q. Khan working for a subcontractor to the Almelo uranium enrichment plant took away documents and lists of equipment and subcontractors.

Evidence is also available of the Pakistani purchases of equipment relating to either uranium enrichment or plutonium reprocessing in the United States, Canada, United Kingdom, France, Switzerland, Belgium, Holland, Germany and Italy. The enriched uranium for peaceful purposes is required for light water reactors. Pakistan has so far no light water reactor. Nor has it any peaceful use for reprocessed plutonium in the absence of a programme for the breeder reactor.

The former chairman of the Pakistan Atomic Energy Commission, Dr Usmani, quoted by M. B. Naqvi in a recent article in MAG magazine (March 26) has questioned the viability of Pakistan's nuclear energy programme in the absence of known and established uranium reserves. Therefore those who are attempting to justify the Pakistani programme on the basis of a comparison with the Indian programme have no leg to stand on.

Bhutto in his death cell testimony has left no one in doubt about his intentions to reach full nuclear capability on the lines of Israel, South Africa, the communist nations and the Christian and Hindu civilisations. From the context it is obvious that the reference was to the weapons.

As late as the end of March 1981, Senator Alan Cranston had clearly indicated that according to the information he had verified from the US administration officials, Pakistan would be in a position to go in for series production by end 1982. When questioned about this the State Department spokesman said that Pakistan would be in a position to produce nuclear weapons in two to five years depending upon various factors. That Pakistan is making strenuous efforts to reach nuclear weapon capability is not in doubt.

There are some in this country who would argue that this Pakistani effort is only a response to the Indian nuclear test in May 1974. But well-established facts disprove this view. The decision to carry out a peaceful nuclear explosion in India was taken in late 1972, and in Pakistan Bhutto took the decision to go in for a nuclear weapons programme at a meeting in Multan in January 1972. This has been attested by Khalid Hassan, Bhutto's press secretary, and Professor Abdus Salam who is said to have opposed the proposal. Those who argue that Pakistan responded to the Indian programme appear to take the simplistic view that Pakistanis generally react to Indian developments.

Whatever be the validity of such a view in various other areas this does not happen to be true in defence matters. Pakistanis were the first to introduce into the subcontinent supersonic aircraft (F-104), sophisticated tanks (the Patton), the submarine (PNS Ghazi), the anti-tank missile (the Cobra) the armoured personnel carriers (M-113), sophisticated radar chair, the first multi-role combat aircraft (Mirage) and a second armoured division.

Indian Arrogance

Pakistan planned offensively in 1947 when the raiders were sent into Kashmir, in 1965 in the Rann of Kutch and in regard to 'Operation Gibraltar.' Bhutto had sworn to raise Asia's best military machine and expanded his forces, more rapidly than at any time before. Therefore the thesis that Pakistan followed in India's footsteps is a peculiar kind of Indian arrogance. On the other hand it is quite clear that Bhutto's motivations and planning had totally independent origin and the Indian factor appeared to have been only one element in it.

If one studies Bhutto's death cell testimony it is evident that the decision to go nuclear was in line with Pakistan's efforts in 1972, to cut itself off from the Indian subcontinent, seek a new identity in the Islamic South-West Asia and to acquire technological leadership in the Islamic world. When Bhutto wrote that achieving nuclear capability was not a question of money but of infrastructure and in the Islamic world Pakistan had a clear lead over others he was indicating that this was part of Pakistan's bid for the leadership of the Islamic world in competition with countries like Iran which had greater resources.

Is Pakistan aiming at a weapon capability or a weapon programme? The available evidence tends to indicate the latter. Pakistan has no adequate uranium resources of other countries. After the cooling off of relations between Libya and Pakistan and Libya and Niger it is doubtful whether Pakistan will be able to obtain future supplies of yellow cake (uranium oxide) from Niger. No country

without either adequate indigenous supply of uranium or assured access to it in another country launches on investments on plutonium reprocessing or uranium enrichment for peaceful technological purposes.

In the case of India, our plutonium reprocessing was a prerequisite for our fast breeder reactor. Pakistan has no fast breeder reactor programme. Enriched uranium is needed for peaceful use in light water reactors like Tarapur and Pakistan has no such reactors. Consequently, the simultaneous two-pronged drive for both plutonium reprocessing and enriching uranium, without having uranium reserves in the country and without having reactor programmes, and the enormous extent of clandestine equipment purchases cannot be fitted in with a peaceful nuclear programme.

The Dutch government report indicated shipment of 6,500 maraging steel tubes for centrifuges and there are reports of the bank of centrifuges exceeding one thousand. The U.S. Congressman, Lester Wolff, aptly described it as a bomb factory when it gets into operation. Such an effort would show that this is not a research programme. No other country is going to purchase enriched uranium from Pakistan since the fuel supply comes as part of a reactor deal and Pakistan not only has no reactor to sell but cannot even put up its own reactor. This scale of operations also does not indicate that Pakistan's aim will be restricted to demonstrative nuclear explosion.

In the case of India all the plutonium that can be extracted has a civil demand for the fast breeder and for the mixed oxide fuel for Tarapur. Pakistan has no such demands either for its reprocessed plutonium or enriched uranium. In the light of this the conclusion is inescapable that what Pakistan is aiming at is not just weapon capability but weapons themselves.

Pakistan has a small plutonium reprocessing plant, slightly smaller than the Trombay one, in Pinstech and is commissioning a big reprocessing plant at Chashma. It also has a small pilot centrifuge plant in Sihala and a bank of one thousand centrifuges at Kahuta. Since some of the major equipment for the Chashma plant from Italy was scheduled to be sent only in December 1980 that plant will take some time to start operating. The only irradiated fuel available for it to handle is that from the Karachi Kanupp reactor which is under IAEA safeguards and which was inspected recently. The small Pinstech plant appears to be processing irradiated fuel from the experimental 5 MW reactor given by the U.S. The last of the centrifuge tubes were shipped from Holland in September 1979. The commissioning of the plant to handle uranium hexafluoride gas by a Swiss firm was even earlier than that.

While there is no firm information on whether either of the two centrifuges are in operation and if so since when, enough time has lapsed since the arrival of the plant and equipment in Pakistan to justify the presumption that either they have commenced operation or will be doing so shortly.

Since from the beginning the effort was directed towards the weapon development other engineering problems such as preparation of explosive lens, the fusing mechanism etc should have been pursued over the years. Therefore Senator Cranston's assessment that by end 1982 Pakistan will be in a position to go in for series production of weapons is a reasonable one.

Some argue in this country that even at that stage Pakistan will only be drawing abreast of India and there will be a time gap between the first nuclear test and the production by Pakistan of deliverable bombs. Both these presumptions are not correct. India at present has only the 40 MW Cirus reactor producing weapon-grade fissile material. The plutonium produced by Tarapur and Rajasthan is not weapon-grade. Though the US had argued that such reactor grade plutonium can be used to produce an explosion no nation has so far done it and the general belief is that it will be difficult to produce bombs of predictable explosive yields.

Next year Pakistan will be producing weapon-grade enriched uranium in significant quantities in the centrifuge facility--the bomb factory as Congressman Lester Wolff calls it. Secondly there need be no time delays between the test and usable weapon. For instance the US conducted the world's first atomic bomb test at Alamogordo on July 16, 1945 and dropped its first bomb on Hiroshima twenty-one days later and the second on Nagasaki twenty-five days later.

Many people confuse the situation that will arise out of Pakistan's asymmetric possession of nuclear weapons with what happened between the two superpowers in the earlier years or the relative stability of deterrence resulting from the arsenals of thousands of warheads assuring total mutual destruction.

Recently US scholars conducted a Delphic Survey of opinion among knowledgeable people and came to the conclusion that the probability of use of nuclear weapons was much higher in the Indo-Pakistan context than in the US-USSR or Sino-Soviet contexts. The situation in the subcontinent will be analogous to the one in 1945 when the US authorities cold-bloodedly decided to use the bombs on two cities of Japan which was already suing for peace and unconditional surrender. The primary motivation was to overawe Stalin.

The wily Georgian was not overawed, but he took no risks. The Soviet Union accelerated the pace of its own research on the bomb, converted the friendly coalition governments of Eastern Europe into communist ones, creating an air defence glacis for the Soviet Union, created a very thick air defence system in Eastern Europe and held out an implied deterrent threat that the Soviet forces would occupy Western Europe in retaliation to any threat of use or use of nuclear weapons.

At that stage since the West had only a few bombs and Western countries were not sure of their ability to penetrate the Soviet air defences and cause unacceptable damage to the Soviet Union they were self-deterred by their own image of Soviet conventional superiority. Such a situation does not exist today between India and Pakistan.

It is the considered view of knowledgeable military men who have thought about the problem that the entire Indian army including the mountain divisions if concentrated on the Western border cannot deter Pakistan with a few nuclear weapons, if India has none. The knowledge that the adversary has nuclear weapons and one's own side does not have them will inhibit the Indian army from concentrating its forces for a counter-attack lest it should offer a tempting target for nuclear attack. The threat of use of the nuclear weapon will send

the civil population fleeing in panic from Punjab, hampering the operations and bringing them to a virtual standstill.

The idea that the bomb cannot be used is absurd and can arise only out of willing suspension of all thinking process. The international community did nothing in the case of genocides in Bangladesh and Kampuchea which were equal to the use of several nuclear weapons. The UN did not even discuss the Vietnam war in which the US dropped more bombs than were used in all history up to then, used asphyxiating chemicals in violation of Geneva protocol and ecocidal agents. The UN is unable to act when Israel defied it with its repeated raids into Lebanon, South Africa raids Angola and Mozambique and China attacks Vietnam.

All that happens is a call for cease-fire after the weapon has been used and a request to the Secretary-General to appoint a mediator. Any action proposed against Pakistan may even be vetoed by the Chinese or the Americans and no other nuclear weapon power is going to punish Pakistan risking escalation. Automatically a majority of the Islamic nations will rally round Pakistan irrespective of the rights and wrongs of the case and all nations receiving their oil from the Gulf will consider discretion to be the better part of valour.

One hears some empty bravado that it would not matter if a town or two is destroyed. One may recall what happened at Tezpur in 1962 when Bomdila fell and in Madras city in 1942 when the Japanese carriers moved into the Bay of Bengal. Though the Indian army had artillery and even tanks at Bomdila and Sela in 1962 and the Chinese did not have any such heavy weaponry, the psychological conditioning about the Chinese human wave created havoc among our forces.

Those who urged the government in the 'fifties to cut the spending on defence were the first to denounce the government in 1962 for its negligence. All those who attributed our setback in Kameng division to lack of self-loading rifles are today bravely talking of the Indian armed forces facing Pakistan armed with nuclear weapons without a deterrent of our own. A nuclear weapon can be deterred only by a nuclear weapon.

Mistaken Impression

If both India and Pakistan have nuclear weapons the former can easily deter the latter since the margin of advantage shifts definitely in favour of India in view of geography, space and location of industries and cities. Though questions are raised whether the Pakistani rulers in possession of nuclear weapons will behave with the degree of rationality which nuclear strategists like Kahn, Brodie, Schelling and others prescribe, the chances of such induced rationality are higher in situations of symmetric rather than asymmetric existence of nuclear weapons on two sides of the Indo-Pakistan border.

There is a school of thought in this country which would ask whether in these circumstances it would not have been worthwhile for India to accept Pakistan's proposal for a nuclear weapon free zone in South Asia or a joint declaration abjuring nuclear weapons. But the above detailed account will show that the Pakistani proposal was not made in good faith but was a cover up for Pakistan's nuclear weapon development on the lines of Zhou En Lai's proposal in the early '60s for an Asian Pacific nuclear weapons free zone even as China was straining

every nerve to reach nuclear weapon capability. Pakistan did not accept the Indian suggestion that they should unilaterally abjure nuclear weapons as Mr Morarji Desai did in 1973. Pakistan has not even ratified the Partial Test Ban Treaty and reserves the right to conduct atmospheric nuclear tests.

How can India deal with any degree of credibility with the government of Gen. Zia who is popularly known in Pakistan as CMLA (Cancel My Last Announcement) and who reneged on his pledges to hold elections and not to harm Bhutto? When Pakistani leaders are pressed whether they can assure that they will not hold a peaceful nuclear explosion (since they have always denounced it unlike India, Brazil and Soviet Union which maintain the viability of PNEs) the cagey answer given is that when Pakistan reaches that capability it will be decided by the government of the day according to popular sentiment at that time.

Buying Time

Francisco Fukuyama, the Rand analyst, after his discussions with the Pakistani leaders, asserts, "What matters here is that there is probably nothing the United States can do at this point to prevent Pakistan from acquiring a nuclear capability. Sanctions will not forestall the programme, nor will increased conventional arms fully answer the insecurities that push Pakistan towards modernisation. US non-proliferation policy is not unimportant; it is simply not particularly relevant to the question of US-Pakistan security relations."

Here "modernisation" means nuclearisation. No American who has visited Pakistan recently and discussed the nuclear weapon issue with Pakistani authorities has come up with the suggestion that a nuclear weapon free zone proposal would influence the Pakistanis to desist from their efforts to reach weapon capability. It was a policy to buy time and cover up their enormous global procurement operations. If some non-official Indians are to do some probing at this stage they are sure to find that Pakistan's enthusiasm for these proposals has cooled quite a bit. There may even be some advantage in India starting a dialogue just to expose Pakistan's duplicity in making these proposals.

In the light of the above analysis the Indian options are very limited. India sought unsuccessfully a nuclear umbrella against China in the 'seventies from the US and the Soviet Union. Today if India were to seek nuclear guarantees against the Pakistani threat this country will be the laughing stock of the entire world.

China befriending India is no permanent solution to India's security problem. They were our friends in the early 'fifties and enemies in the early 'sixties. While intentions of nations can change their capabilities do not. The US is contemptuous of an India which they see as a country with no will to power. If Pakistan were to go nuclear and India does not, it will confirm in the US mind the image they held in the late 'fifties and 'sixties (till the battle of Kham Karan in 1965) that India is a country to be abandoned in accordance with the triage doctrine. In fact all this would mean India being forced into a virtual membership of the Warsaw Pact.

There is only one way in which India can keep its options open--that is to exercise the nuclear option. When we do that the US may come to realise that they could not ignore a nation of seven hundred million with nuclear weapons just as Nixon said about China in 1971. It would enable us to deal with China on an equal basis. We shall be able to sustain our cordial relations with the Soviet Union too.

But the time to act is not after Pakistan conducts the test. That would give Pakistan an undue advantage. The time to get ready for the appropriate response is now.

There is a mistaken impression among some people that India exercising nuclear option would go against her advocacy of disarmament. This impression is based on an incorrect appreciation about the dialectics of disarmament.

There are four categories of weapons of mass destruction--biological, chemical, radiological and nuclear. The UN in its very first resolution in 1946 proclaimed that all these four categories of weapons of mass destruction should be banned. Out of these four the first three are within the technological capabilities of many nations of the world. The biological weapons have been banned under a convention. There are discussions going on regarding conventions to prohibit chemical and radiological weapons. But nuclear weapons alone are sought to be legitimised by the industrialised world and this is mostly because of the impression that a few countries of the industrialised world could, along with their allies, sustain the cartelised possession of these weapons. Countries having arsenals of chemical weapons have not suffered in credibility while urging for disarmament in respect of chemical weapons.

India will be exercising its nuclear option on the ground that in the present international strategic environment she has no choice but to safeguard her own security and interest which may give her necessary credibility to press for nuclear disarmament--a credibility she does not command today in view of her non-nuclear status. For this reason Africans like Professor Ali Mazrui welcomed the Indian nuclear test in 1974 in his Reith lectures. In international councils of today India pleading for nuclear disarmament is treated as a case of an exceedingly old woman advocating chastity and virtue.

There are others who bring in Gandhiji into the argument. Gandhiji [as published] pleaded for the practice of non-violence from a position of strength. He wrote:

"I do believe that where there is only a choice between cowardice and violence I would advise violence. Thus when my eldest son asked me what he should have done, had he been present when I was almost fatally assaulted in 1908, whether he should have run away and seen me killed or whether he should have used his physical force which he could and wanted to use, and defended me, I told him it was his duty to defend me even by using violence.

Hence it was that I took part in the Boer war, the so-called Zulu rebellion and the late war. Hence also do I advocate training in arms for those who

believe in the method of violence. I would rather have India resort to arms in order to defend her honour than that she should in a cowardly manner become or remain a helpless witness to her own dishonour.

"But I believe that non-violence is infinitely superior to violence, forgiveness is more manly than punishment. Forgiveness adorns a soldier. But abstinence is forgiveness only when there is the power to punish, it is meaningless when it pretends to proceed from a helpless creature. A mouse hardly forgives a cat when it allows itself to be torn to pieces by her. I therefore, appreciate the sentiment of those who cry out for the condign punishment of General Dyer and his ilk. They would tear him to pieces if they could. But I do not believe India to be helpless. I do not believe myself to be helpless. Only I want to use India and my strength for a better purpose....

"I am not pleading for India to practise non-violence because it is weak. I want her to practise nonviolence being conscious of her strength and power."

No doubt Gandhiji expressed himself against the atom bomb but that was long before nuclear weapons became the legitimate international currency of power.

The kind of dilemma now faced by India was once faced by Gandhiji in a different context. He wrote: "I am a member of an institution which holds a few acres of land whose crops are in imminent peril from monkeys. I believe in the sacredness of all life and hence I regard it as a breach of ahimsa (the principle that injury should not be done to any living thing) to inflict injury on the monkeys in order to save the crops. I would like to avoid this evil. I can avoid it by leaving or breaking up the institution. I do not do so because I do not expect to be able to find a society where there will be no agriculture and therefore no destruction of some life. In fear and trembling, in humility and penance, I therefore participate in the injury inflicted on the monkeys, hoping someday to find a way out."

It was perhaps in consonance with this spirit that Gandhiji approved of India's military operations in raider pillaged Kashmir in 1947.

There is a similar parable of Ramakrishna Paramahansa. A cobra turned non-violent under the influence of a sage but it was continuously teased by young boys who found that it was quite harmless. When the teasing reached an intolerable stage the cobra went back to the sage and asked what it was to do under the circumstances. The sage replied: "I told you to be non-violent. Did I ever tell you that you should not spread out your hood and hiss?" The cobra followed that advice and was thereafter left in peace.

The doctrine of deterrence as followed by the two superpowers and their allies is an untenable one. But that does not mean the doctrine is totally valueless under all circumstances. Like many other concepts evolved by man it is not a verity nor can it be pushed to its extremes as the superpowers tend to do. Within limits with all risks of possible failure it does operate. There can be no question that disarmament is preferable to living in a world poised on the

knife-edge of the doctrine of deterrence. But there is no reason why limited deterrence should not be practised even while attempting to bring about nuclear disarmament.

The crux of the matter is not whether we consider the doctrine to be effective but whether others do. Therefore there is nothing illogical in pointing out forcefully the pitfalls in the doctrine of deterrence even while taking steps which will deter others from hurting us because of their conditioned reflexes or cultivated perceptions.

CSO: 5100

U.S., INDIAN VIEWS ON TARAPUR SPENT FUEL TOLD

Madras THE HINDU in English 27 Apr 81 p 1

[Article by G. K. Reddy: "U.S. Has No Say Over Spent Fuel"]

[Text] New Delhi, April 26. The External Affairs Minister, Mr P. V. Narasimha Rao, who returned from New York today after attending the U.N. Security Council meeting on Namibia, will be making a statement in Parliament in the next few days on the outcome of the recent Washington talks on Tarapur.

The Chairman of the Atomic Energy Commission, Dr Homi Sethna, who participated in these talks with the Reagan administration, has been called to Delhi to advise the Minister on what should be said at this stage on the subject.

The Government is also constituting a small negotiating group to decide the stand to be taken at the next round of talks in Delhi, whether India should welcome the idea of terminating the agreement amicably by mutual consent or try to keep the issue open for some more time until it has completed its own technical studies for switching over to the mixed oxide fuel, now under development.

In telling India that perhaps the best thing to do in the circumstances would be to terminate the controversial agreement, the Reagan administration is maintaining that it will take considerable time to complete its review of the working of the Non-Proliferation Act on a firm conclusion on how far it should go in amending the legislation.

The U.S. Stand

The Indian officials were told that if India wanted to wait it could do so until the U.S. had settled its new policy line. But if it was not prepared to put up with the agonising uncertainty, India should welcome the idea of an early termination of the agreement.

The U.S. negotiators held out the hope, in posing these alternatives, that the present administration was not averse to the idea of clearing the second shipment (authorised by President Carter) at an appropriate moment, subject to the assurances given to the Congress by Mr Edmund Muskie, the former Secretary of State.

But India is inclined to believe that the U.S. itself is now caught up on the horns of dilemma not knowing how far it should go in either adhering to the Non-Proliferation Act in its present form or amending the mandatory provisions to gain greater flexibility in enforcing it.

Business Pressure

Though the non-proliferation lobby in the Congress is not going to countenance any far-reaching changes, the powerful U.S. business interests have started exerting pressures that the American share of the reactor business should not be lost through a rigid insistence of safeguards beyond a tolerable point.

The Reagan administration is also agreed that, whatever the scope of the proposed changes in the Act, the U.S. should try to live down the stigma that it is an unreliable supplier, which can go back on solemn agreements under domestic political pressure.

It realises that the other members of the so-called London club of nuclear exporters have been taking full advantage of this loss of confidence in the U.S. to promote their own business interests.

Confusion

There is also considerable confusion over India's legal right to the spent fuel at Tarapur, which has never been in doubt, or the scope of joint determination to operating the reprocessing plant.

There is roughly 230 tons of spent fuel at Tarapur accumulated over the last 10 or 12 years and at no stage has the U.S. questioned India's ownership of this fuel wastes in the past.

The Tarapur agreement merely stipulated that, after meeting its own requirement, India will sell the surplus plutonium derived from the reprocessed fuel wastes to the U.S. at a mutually acceptable price.

The agreement required India to submit and obtain U.S. approval of the design for building the reprocessing plant at Tarapur, which had been approved in the normal course before its construction.

The joint determination clause relating to the safeguardability of this plant applies only to the reprocessing of the Tarapur fuel wastes, and not other spent fuel brought from the Rajasthan reactors or the experimental reactors at Trombay, which are covered by separate safeguards, outside the purview of the Tarapur agreement.

No protest

The reprocessing plant at Tarapur has been put through trial runs in the last 14 months with fuel wastes brought from elsewhere, and the U.S. has not protested since it has no right to insist on joint determination on the other uses of this unit.

This aspect has been conceded more than once by the U.S. negotiators in the last two years, although they continue to maintain that the present international safeguards should continue on the Tarapur fuel wastes even after the termination of the agreement.

The Government does not want to go into all these complexities at this stage before the conclusion of the current discussions. But it has told the U.S. negotiators in unmistakable terms that if they choose to unilaterally repudiate their contractual obligations, India will be free to do what it chooses to do with the spent fuel which has been paid for by India and as such it has an unquestioned right over it.

The trilateral arrangement for international inspection, worked out as a logical corollary to the bilateral agreement, would automatically lapse once the U.S. went back on its fuel supply commitment. There was no question of the International Atomic Energy Agency (IAEA) continuing thereafter to inspect the Tarapur plant.

The joint determination provision in regard to the safeguardability of the reprocessing of the fuel wastes would also lapse.

Excuses

At one stage of this tortuous exercise when the U.S. was still toying with the idea of pressuring India to agree to fullscope safeguards on its entire nuclear programme, it was suggested that the spent fuel could be shipped back to the U.S. for reprocessing and India's requirement of plutonium for the fuel mix for Tarapur could be supplied on mutually agreeable terms. The U.S. went back on this offer when India decided to call the bluff by agreeing to ship back the fuel wastes.

Then the U.S. came out with the excuse that American public opinion would strongly oppose any bid to dump the highly radio-active spent fuel in that country.

And it became increasingly clear as this ding-dong drama dragged on interminably that the U.S. has no political leverage or legal right to compel India to accept safeguards on these fuel wastes even after it has unilaterally gone back on the agreement.

CSO: 5100

PARLIAMENTARY COMMITTEE ON ATOMIC ENERGY MEETS

Madras THE HINDU in English 28 Apr 81 p 1

[Article by G. K. Reddy: "N-Explosion by Pakistan Coming"]

[Text] New Delhi, April 27. The Government today disclosed the disquieting information that Pakistan might carry out a nuclear explosion any time between July, 1981, and September, 1982, at a site near the Rann of Kutch, the Rajasthan border or in Baluchistan.

A reference was made to this grim possibility at a meeting of the informal consultative committee of Parliament for atomic energy, space, science and technology, electronics and environment presided over by the Prime Minister, Mrs Indira Gandhi, who is directly in charge of these sensitive departments.

A mention was also made of reports that Pakistan had built a second reprocessing plant capable of producing 20 to 25 kg of plutonium a year. It had, in addition, two centrifuge plants, one a pilot plant and the other a medium one, which had the capacity to produce 25 to 28 kg of highly enriched uranium.

Danger of War

The Chairman of the Atomic Energy Commission, Dr. H. N. Sethna, who attended the meeting along with the heads of other departments, answered a wide range of questions on Pakistan's nuclear capability and other related matters, including the recent talks with the U.S. on the future of the Tarapur agreement.

The Prime Minister, who participated in the discussion which followed, fully supported the view that a mere taking of a tough stand on the fuel issue would only create unnecessary and avoidable problems.

But otherwise both Mrs Gandhi and Dr Sethna maintained that there was no question of any doubt about India's ownership of the spent fuel which was clearly conceded in the Tarapur agreement.

The members were left with no doubt whatsoever that India would assert its right to reprocess the accumulated fuel wastes without any impediment if the U.S. broke the agreement and went back on its contractual obligations.

The Prime Minister warned that, though India had no desire to enter into an arms race with Pakistan, it had to be prepared to face any situation. The big danger today was that though nobody wanted a war, there might be a war with everybody drifting towards it.

It was in this context that a detailed reference was made to Pakistan's nuclear programme. The committee was told that the first test might be conducted with a fission device, implying that it would be an atomic explosion. It was only after exploding a fission device that a fusion device could be tested for carrying out a thermo-nuclear or hydrogen explosion.

As most of the time was taken by the discussion on the Tarapur issue and Pakistan's nuclear ambitions, there was little opportunity to deal in any great detail with matters relating to other scientific departments.

The members were informed that the oceanographic research vessel which was being acquired from West Germany for exploiting sea bed mineral resources known as polymetallic nodules would be ready for delivery by the end of 1982.

Two Indian scientists had already been specially trained in surveys of polymetallic nodules on board a West German research vessel in the Pacific. Another Indian scientist had completed 18 months' training in marine geophysics in that country.

Forty more scientists from 10 different user agencies would be trained in West Germany during 1981-82. It was expected that nearly 30 technical and nautical personnel would also be trained in West Germany in the care, maintenance and operation of the scientific and specialised equipment fitted in the research vessel.

Devanagari in Computers

About use of the Devanagari script in computers, the members were told that the committee on standardisation of codes for information processing had proposed a seven-bit Indian script standard code for information interchange.

A Hindi Fortran compiler had been developed by the Electronics Corporation of India Limited on an experimental basis. Besides, development of Devanagari-based programming languages was in progress at the Birla Institute of Technology and Science in Pilani.

The committee was told that experimental work on a standard keyboard design for teletypewriter had been successfully done for display of Hindi text on video display units.

CSO: 5100

SETHNA ANNOUNCES NUCLEAR GENERATION PLAN

New Delhi PATRIOT in English 29 Apr 81 pp 1,7

[Text] Atomic Energy Commission Chairman H. N. Sethna on Tuesday said that the Tarapur power station would continue to operate even if the supply of enriched uranium was discontinued by the United States.

Dr Sethna also disclosed that the country was planning to install 22 nuclear reactors in different parts of the country by 2000 A.D. Ten reactors would be of 235 mw capacity while the rest of 500 mw capacity each, he added.

He was delivering the keynote address at the seventh annual regional meeting of the Association of Indian Engineering Industry held in the Capital.

The Planning Commission, Dr Sethna said had agreed to start work on six nuclear reactors of 235 mw capacity during the sixth Plan period. An outlay of Rs 1,000 crores had been provided in the Plan for development of atomic energy, he said.

Dr Sethna also pointed out that a massive programme of generating additional 80,000 mw electrical power was envisaged by the beginning of 2000 A.D. Thus the total power generation would be raised to 110,000 mw from the present 30,000 mw during the period, he added.

The nuclear power station, Dr Sethna said, would meet 10,000 mw requirement, while 30,000 mw would be obtained from hydroelectric stations and 40,000 mw from coal-fired units. He expressed the hope that the shortage of electricity in the country would be overcome by better capacity utilisation, and better management of grid conditions.

Referring to the operating experience of nuclear power stations, Dr Sethna said that the capacity factor of the operating nuclear stations was much better than that of the thermal power stations. He pointed out that construction of nuclear stations involved extensive infrastructural facilities and it would be more advantageous to locate four reactors at a given site instead of the present provision of two.

Call to Industry

The Indian engineering industries, Dr Sethna said, could contribute in areas like fabrication of large stainless steel components of high precision as well

as tanks and vessels not prone to stress, corrosion or cracking, manufacture of special pumps with zero leakage and also in other equipments like centrifugal chillers, air compressors and blower fans of high capacity.

Earlier, Union Minister of State for Science and Technology C P N Singh said that there was a great need for the Indian industries to earmark substantial resources for research and development in technology.

India, Mr Singh said, had registered a record growth rate of 24.7 per cent in the electronics industry. The industry was playing an important role in all sectors of national economy. A number of steps to promote it had been taken by the Government, he added.

Association of Indian Engineering Industry chairman Gurpreet Singh welcomed the guest.

CSO: 5100

RAO SPEAKS TO LOK SABHA ON TARAPUR FUEL TALKS

Bombay THE TIMES OF INDIA in English 30 Apr 81 pp 1,7

[Text] New Delhi, April 29. The external affairs minister, Mr P. V. Narasimha Rao, indicated in the Lok Sabha today that further discussions would take place shortly with the United States here on modalities for an "amicable termination" of the Indo-US agreement for the supply of enriched uranium to the Tarapur atomic power station.

Short of saying directly that the agreement is as good as dead, Mr Rao, who was speaking during a calling-attention discussion, said that the agreement could be saved only if the US legislation of 1978 regulating supplies of nuclear fuel was amended, and at the moment there was not much possibility of this happening.

He said that during the talks in Washington on April 16 and 17 "the United States side indicated that they could not hold out any hope for further fuel supplies, as they were bound by their existing laws, and suggested that we might consider, as one possibility, an amicable termination of the agreement."

Agreeing with Mr Samar Mukherjee (CPM) that political reasons had shaped the US policy of nuclear fuel supplies to India, Mr Rao said it was possible that under a certain set of circumstances the agreement might be salvaged. However, he was under no illusion. But "we need not bang the door. We have not violated the agreement."

Terms Violated

He reiterated India's unequivocal stand that the spent nuclear fuel belonged to this country. There was no question of discussing with the US about what India should do with it. The government would not compromise its right over the spent fuel, including the right to reprocess it. As far as spent fuel was concerned, what would have happened to it at the expiry of the agreement would happen to it as soon as the agreement was terminated, he said.

Mr Rao said even if the US supplies stopped, the Tarapur station would not stop. "We are not going to sign the non-Proliferation Treaty. This was and continues to be our policy."

He said that the government was not worried whether the agreement on nuclear fuel stayed or not. It was interested only in knowing the fate of it, which

would be decided soon. It was not true that the agreement had already been unilaterally abrogated by the US government and India was in a helpless situation. "Alternatives available to us are well known. They have been tested."

The external affairs minister said that of the two shipments licensed by the Carter administration last year, one had come. "About the second I am not sure that it is going to come."

Referring to the observation by the Janata member, Mr B. Parulekar, that what remained to be done was to sign the death warrant of the agreement and give it a funeral. Mr Rao said the burial had to be decent. "We chant mantras at funeral."

He said that during the recent talks in the US "many alternatives and modalities" were suggested. The "non-papers" referred to in some press reports were notes of discussions and views which were exchanged but were not part of the formal dialogue.

Recounting the basic features of the agreement which was signed in 1963 and was to remain in effect for 30 years, Mr Rao said that in 1978 the US passed a legislation which made it necessary for the purchases of nuclear fuel supplies and components after September 1980 to accept more stringent safeguard provisions. India pointed out to the US at that time and frequently thereafter that such domestic legislation could not be retroactively applied to an already existing and currently valid agreement "which has the force of a treaty, as both governments have completed the necessary constitutional procedures."

He said that since the time, delays in sending fuel supplies became more protracted. The government registered its protest over these delays on several occasions and also pointed out that the application of new and extraneous considerations was unacceptable.

In June 1980, President Carter approved two licences for annual shipments which were due in 1979 and 1980. The US administration gave a commitment to Congress at that time the future shipments of fuel would attract the more stringent provisions of the 1978 legislation. "The shipment for 1979 has been received, but the shipment for 1980 is still to be sent to us. An application for a licence for fuel made in September 1980 for subsequent supplies is still to be acted upon by the US government."

Mr Rao said that as the delays in fuel supplies were causing difficulties in the running of the power station the US government was formally asked for assurances on uninterrupted and timely fuel supplies during the life-time of the agreement. "While the United States government formally intimated to us that under the agreement no assurances were necessary, we were given to understand informally that continued supplies would not be easily forthcoming hereafter because of their legislation. Subsequently, it was suggested that we might hold discussions on this question. Accordingly, a delegation led by the chairman of the Atomic Energy Commission went to the United States for discussions on April 16 and 17.

"During these discussions the Indian side indicated that they would like continued implementation of the 1963 agreement provided no extraneous considerations were permitted to interfere in its performance. The United States side indicated that they could not hold out any such hope.

"Our delegation has reported on these discussions which are now under consideration of the government. Further discussions with the United States will take place shortly in India."

Mr Rao added that it would be the endeavour of the government to reach a satisfactory conclusion on the discussions with the US while preserving India's national interest.

Initiating the discussion, Mr H. C. Singh Rawat (Cong-1) said the US attitude to India was discriminatory. It had not responded even when the Indian prime minister had "bowed his knees" before the US government in 1978. The US administration was trying to delay India's progress in nuclear field in the garb of carrying on a dialogue. The US was prepared to supply arms to Pakistan and relax restrictions for that purpose.

Mr B. V. Desai (Cong-1) said the US had violated contractual terms several times and delayed nuclear fuel deliveries from 20 weeks to 104 weeks. It was very strange that the US government wanted to unilaterally abrogate the agreement and yet claim the right to inspect spent fuel.

Mr Rao said the inordinate delays had amounted to default.

Mr Samar Mukherjee said the US attitude should not be considered in isolation of its general policy and strategy. The attitude had changed suddenly after the nuclear explosion by India in 1974. India was one of the targets of the US blackmail. The US imperialism was supplying arms to Pakistan to create destabilisation in the region. American imperialism had its accomplices within this country and it was a sign of weakness to equate the US and the USSR.

Mr Parulekar saw no purpose in further discussions with the US government when it had already decided to stop nuclear fuel supplies to this country. He wanted a categorical assurance that the Indian government would not compromise on the use of spent fuel.

Mr Parulekar asked Mr Rao whether the original agreement had a provision enabling the CIA to conduct monitoring activities from the Nanda Devi and whether the US government was willing to continue nuclear fuel supplies of India accepted certain conditions.

Mr Rao said there was nothing about the Nanda Devi in the agreement. No conditions had been proposed by the US Government.

ESD: 5100

WORK ON SPENT FUEL PROCESSING PLANT PROGRESSING

Calcutta THE STATESMAN in English 6 May 61 p 6

[Text]

NEW DELHI, May 6.—Work on a plant for reprocessing spent fuel from the Tarapur and Rajasthan atomic power stations is progressing fast at Tarapur, reports C.N.I.

Most of the work on the plant is expected to be completed during the current financial year. The Bhabha Atomic Research Centre has fabricated plutonium-bearing oxide fuel elements as an alternative fuel for the Tarapur atomic power plant. It is in the advanced stage of operational feasibility.

According to the performance budget of the Department of Atomic Energy for 1961-62, facilities for transporting spent fuel are being made. This is for the transportation of spent fuel from the Rajasthan atomic power station to the power reactor fuel processing plant at Tarapur. All major work has been completed and procurement and erection of equipment is also nearing completion.

The report says that the waste management facilities at Tarapur consisting of the liquid waste treatment plant, decontamination centre and solid waste management facility have been completed.

About Rs 118.15 crores have been approved for various programmes of the centre. Of this, Rs 51.48 crores is for ongoing schemes and Rs 66.66 crores for new schemes.

The three main projects included in the continuing schemes of the centre are the 100-MW thermal research reactor (R.D. project) which is being built at Trombay to provide engineering facilities to test prototype fuel elements for power reactors, and the plutonium recycling project for the study of recycling power reactor processed fuel for the thermal research reactor project an outlay of Rs 45.66 crores has been provided in the Sixth Plan and it is expected to be completed by April 1963.

The plutonium recycling project is expected to be completed in 1965. The outlay for this is Rs 3.93 crores.

ARGENTINA

DETAILS ON HEAVY WATER PLANT FEATURED

Buenos Aires LA NACION in Spanish 31 Mar 81 sec 3 p 2

[Text] The heavy water factory will occupy an area five and a half blocks long and three blocks wide on which it is planned to set the large equipment for the chemical and physical processes by which hydrogen will be completely replaced by deuterium in combination with oxygen. The molecules are extracted from the basic influx which is provided by the Limay River. Ammonia, potassium, nitrogen and other products in insignificant amounts are added to it. For this operation, converters, exchangers, towers and storage tanks which will use 250,000 megawatts of electricity per year and 175 million cubic meters of natural gas will be necessary. As complementary functions inside the assigned area, there will be the engine room, the maintenance shop, transformer stations and the command post and auxiliary services such as administration, and other services for the 300 persons who will be engaged in the development of the complex.

It has been slightly over a year since the National Atomic Energy Commission (CNEA) signed a contract with Sulzer Brothers Ltd of Winterthur (Switzerland), for the manufacture, installation, and putting into operation of an industrial heavy water plant--with an annual capacity of 250 tons--in Arroyitos, slightly more than 50 km west southwest of Buenos Aires, where in 1984 production should begin on the coolant and moderator of the reactors which are planned for the Argentinean nuclear program.

Since the contract was signed on 14 March 1980, the ground has been leveled on which will be installed several thousands of tons of steel and other materials, in tubing, tanks, motors and buildings which will alter the lonely landscape of the place, scarcely 1000 meters upstream from the compensating dam for the discharge from the El Choclon electric power plant on the left bank of the Limay River.

A subcontractor has already constructed the paved access road from Route 237--which at that point branches off Route 22 to go to Bariloche--and at the same time has set up equipment with which he is starting the construction of the foundations which will support the structure which is designed to obtain the substance rich in deuterium and is 10 percent heavier than natural water.

The rest of the project, which is to be completed by 1984, according to the statement of Engineer Casanova, the project's director at the Buenos Aires branch of the Swiss group, involves several areas of attention.

Argentine Firms

"At the present time," he said, "the engineering of the process and of the various buildings is being worked out here while we are preparing the papers to get bids for the installation, which will be a rather large contract for the Argentine firms."

It is a matter of one step after another without falling behind. With regard to the transfer of various components into the area he said, "there will be some 20,000 tons at the ports and airports to be transported, a substantial quantity which requires special transportation since the equipment and the components are large and heavy."

He said, "We already have bids from firms in your country which engage in this activity."

"The installation," he said, "is a rather large operation and there are plans to start it during the coming year at the same time as the civil engineering projects. We are getting ready to call for bids and in 1981, after a very detailed evaluation, we will sign the pertinent document." He added that the work already begun on the land is being done by the Impresit-Dycasa-Losing consortium.

Another aspect which he explained, at the request of those present at his remarks during Ferisur '81, related to the peak number of workmen who will be employed. It is estimated that 2,000 persons will be employed in the construction of the factory, which will be under the sole ownership of CNEA and of them at least half will be engaged in civil engineering projects while the rest will be distributed among transportation, installation and operational work.

"The general timetable," he pointed out at another point, "sets the completion of most of the contract by the end of 1983 or early in 1984 to be followed immediately by the test operation and the first phase of production." It is a product which is critically needed on the international market and to obtain it Argentina is investing about \$400 million, according to statements made in 1980 by Vice Adm Carlos Castro Madero, head of CNEA.

With regard to this figure, engineer Michael Bally, president of the Sulzer Brothers Ltd branch, stated, "Our country's part is about 400 million Swiss francs" and then stressed the importance of the agreement with these words, "It not only is having a great impact on our enterprise but we think that it will be a showing of the Swiss colors in Argentina."

There Will Be No Pollution

The speaker deflated speculation that there would be eventual contamination of the environment by residues from the industrial complex.

"Actually, what is involved is a fertilizer plant," he said with a soothing smile, "that produces ammonia, a gas which is not toxic and is used in the refrigerator plants in this area, and that is an important point in favor of the work we are doing--that it is not noxious."

Dr Christoph Etter, the Sulzer advisor stated, in view of the interest in the difficulties in working out the terms of the project, "There really have been none, because a document has been signed between Switzerland and Argentina regarding the international safeguards of this plant and, consequently, it was possible to conclude the main contract without problems."

In this illustrated talk about heavy water a summary was also made of the long standing and varied work of the group with headquarters in Winterthur, during which it was mentioned that its subsidiary, the Escher Wyss firm, is responsible for manufacturing and installing the three turbines planned for Hidronor at the electrical power plant in Arroyitos with a total capacity of 120 megawatts.

Sulzer Since 1834

"Aside from those products," Engineer Bally said with pride, "we manufacture other machinery primarily for the purpose of the generation of energy, such as steam boilers, gas turbines, Diesel motors, compressors for various industries and also refrigerating and air conditioning equipment and weaving machines."

The enterprise dates back to 1834 "when we started as a foundry, as did everyone at the time, to build machine parts and later, after gradual development, made steam engines." He told an anecdote on this point: "I can tell you that on a trip to Tucuman I discovered something which was one of our main specialties, a machine Sulzer supplied in 1893 to a sugar mill which still runs at every harvest."

Sulzer With Argentine Firms

He closed by saying, "In 1924, due to Argentina's importance to our group, it was decided to establish a branch and a few years ago a piece of land was bought in Munro, and we signed contracts for licenses with Marisa and with AFNE [State Shipyards and Naval Factories] for the manufacture of motors for seagoing ships and also, with Pescarmona Metalurgical Industry in Mendoza for the manufacture of hydraulic turbines."

Diagram 1

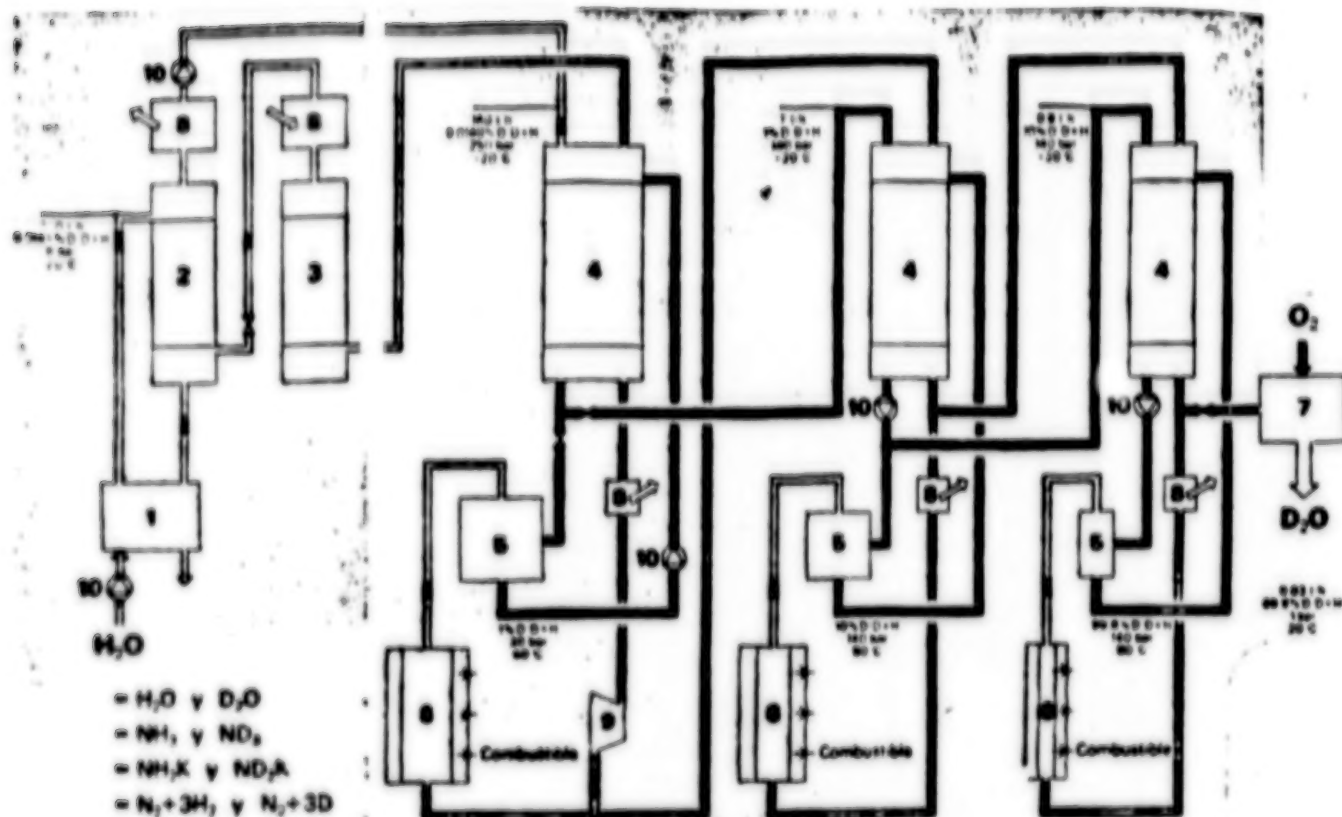
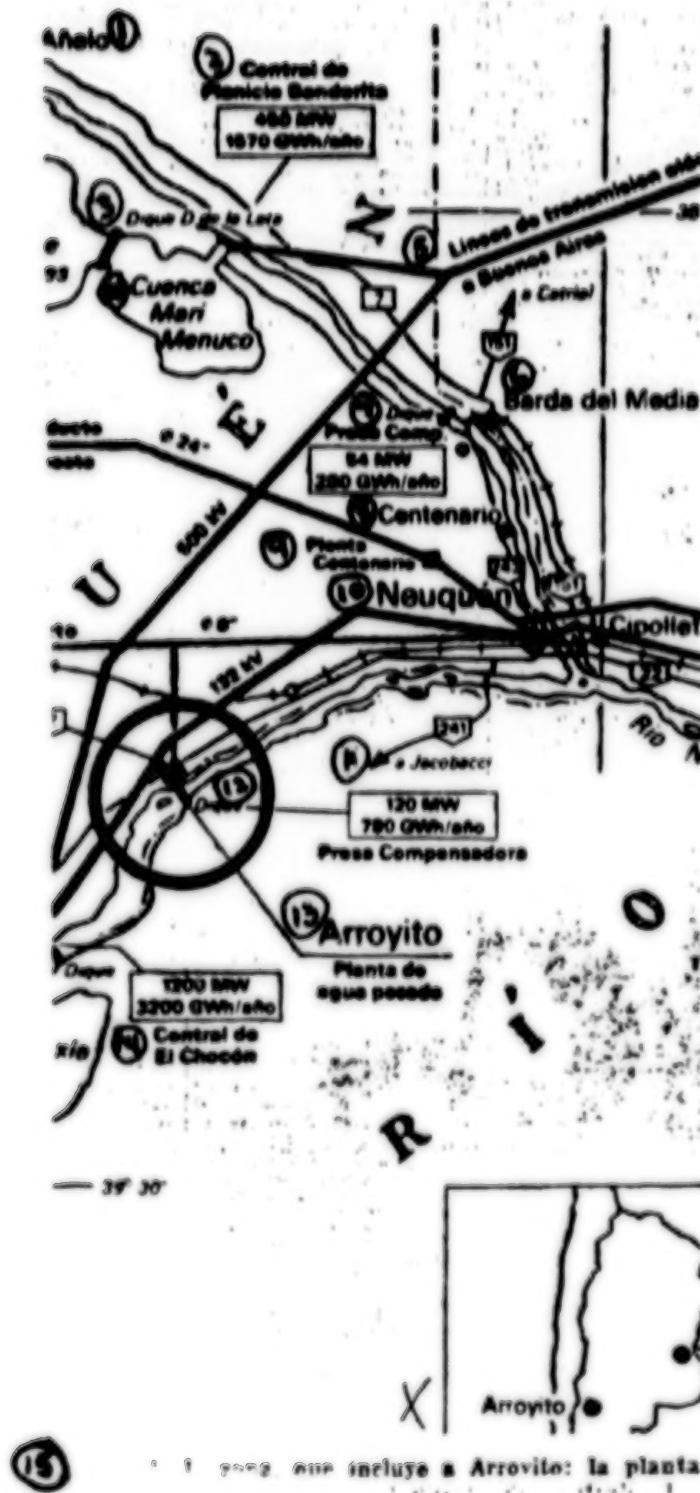


Diagrama del flujo: 1) Tratamiento del agua (H_2O); 2) Cambio isotópico H_2O/NH_3 ; 3) Síntesis de amoníaco (NH_3); 4) Cambio isotópico NH_3 /gas de síntesis; 5) Recuperación del catalizador; 6) Horno disociador de NH_3 ; 7) Quemador de deuterio (D_2); 8) Cambio de calor; 9) Compresor; 10) Bombas

Diagram of the flow:

1. Water treatment (H_2O)
2. Isotopic change H_2O/NH_3
3. Synthesis of ammonium (NH_3)
4. Isotopic change NH_3 /synthesis gas
5. Recovery of catalyst
6. Oven for the preparation of NH_3
7. Deuterium (D_2) burner
8. Heat exchange
9. Compressor
10. Pumps

Diagram 2



KEY:

- (1) Anelo
- (2) Electric power plant of Planicie Banderita
- (3) De la Plata Dam
- (4) Mari Menuco Basin
- (5) Electric Lines to Buenos Aires
- (6) Barda del Media
- (7) Dam
- (8) Centenario
- (9) Centenario electric power plant
- (10) Neugquen
- (11) to Jacobacci
- (12) Dam
- (13) Arroyito, heavy water plant
- (14) Choclon electric power plant
- (15) Map of the area including Arroyito; the plant is located very near the hydroelectric plant and gas ducts.

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June 4, 1981